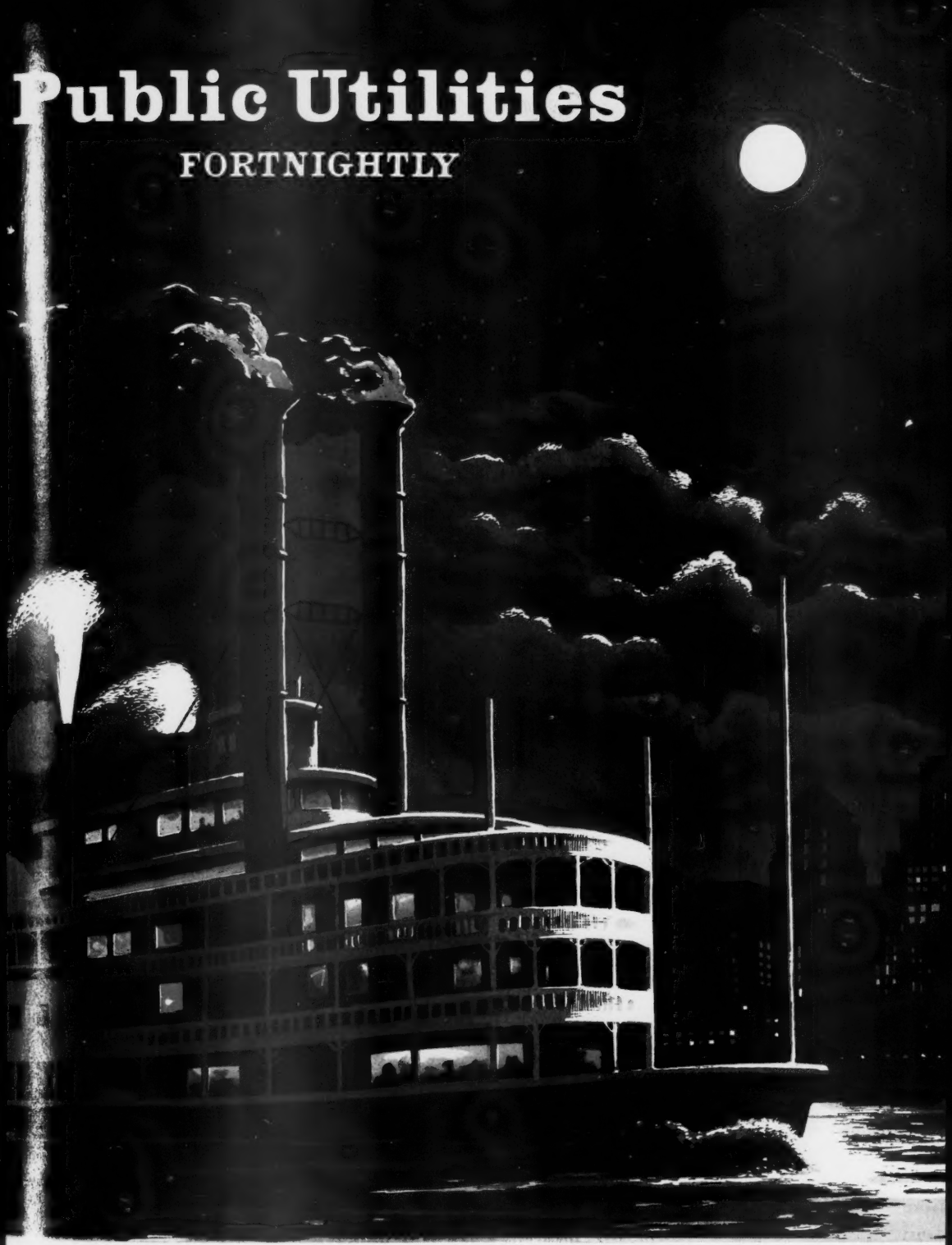
Public Utilities

FORTNIGHTLY



EET GS—THIRTY-NINTH ANNUAL CONVENTION, AMERICAN GAS ASSOCIATION, OCTOBER 7-9, ST. LOUIS, MO.

BOSTON UNIVERSITY

October 10, 1957

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Public Utilities

FORTNIGHTLY

VOLUME 60 OCTOBER 10, 1957 NUMBER 8

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The nationalized industries of Britain are subject to all the taxes—income, profits, and local—to which private industry is liable.

The Consumer Benefits of Natural Gas for Electric Generation ..... *Larry Shomaker* 559
The natural gas industry has grown and prospered through interfuel competition.

Making Good Use of Gas ..... *Clifford V. Coons* 573
The versatility of gas, improved appliances and equipment, and popular appeal have given a boost to the industry's outlook.

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The number of municipally owned gas systems across the nation doubled between 1950 and 1957.

The Harris-O'Hara Gas Bill—Boon or Bonanza? ..... *Willard F. Stanley* 593
The natural gas bill, a proposed amendment to the Natural Gas Act to free producers from Federal Power Commission regulation, is before the House of Representatives.

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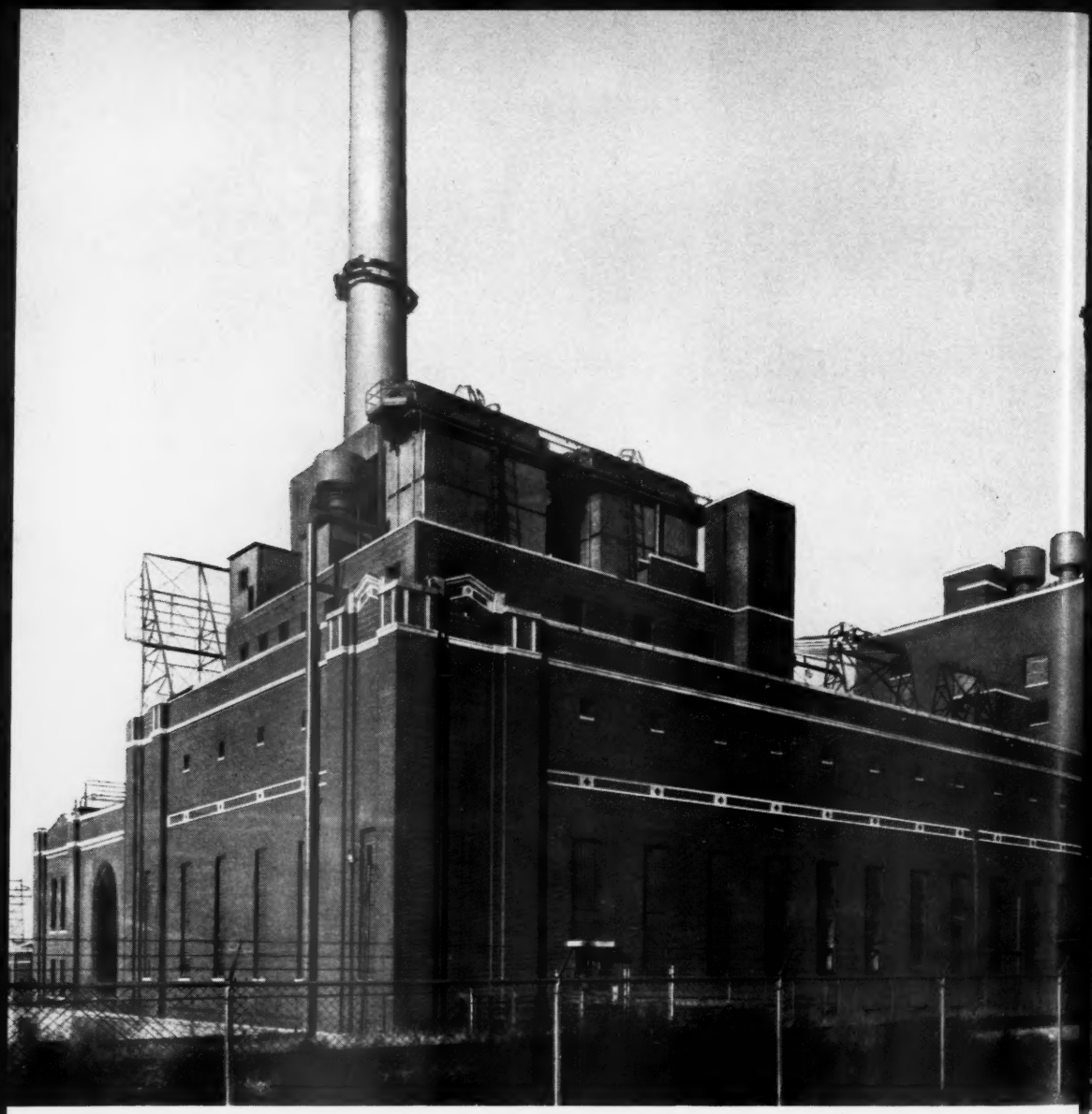
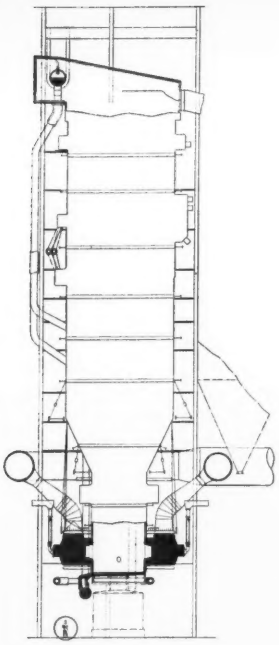


New Cyclone Furnace Unit

Installation at Joliet Station to Bring Higher Efficiency ... Lower Costs to Power Generation

Commonwealth Edison System's newest addition, a
its Joliet Station, will be a B&W Radiant Rehea
Boiler with Cyclone Furnaces. This is the 16th uni
of this type the system has bought since 1944 and
raises total system capacity served by Cyclone-fire
units to over 1,600,000 kw.

Early in the development of the Cyclone Furnac
by B&W, Commonwealth Edison recognized it
potentialities for burning low-grade coals. The
system's engineers and operators cooperated with
B&W in the project, and, in September 1944, the



B&W RADIANT REHEAT BOILER WITH CYCLONE FURNACES, arranged for opposed firing, for Commonwealth Edison System's Joliet Station. Unit will deliver 2,200,000 pounds of steam per hour at 2100 psi with temperature of 1055 F, reheat to 1005 F. Boiler design is 2375 psi. Sargent & Lundy, Consulting Engineers.

CYCLONE FURNACE BOILER UNITS IN COMMONWEALTH EDISON SYSTEM

STATION	NO. OF BOILERS	NO. OF CYCLONES	TOTAL CAPACITY LB/HR	DESIGN PRESSURE	STEAM TEMP. F	REHEAT TEMP. F
Calumet	1	1	150,000	600	650	—
Waukegan	1	2	300,000	650	760	—
Fisk	2	8	1,500,000	1475	935	—
Joliet	2	6	1,200,000	1525	1010	—
Ridgeland	4	16	2,920,000	2125	1050	—
Waukegan	1	4	830,000	2050	1010	1010
Ridgeland	2	12	2,200,000	2125	1050	1000
Will County	2	10	2,400,000	2125	1050	1010
Joliet	1	9	2,200,000	2375	1055	1005
	16	68	13,700,000			

nit For Commonwealth Edison

first commercial application went on the line at Calumet Station. Historic Boiler Unit No. 20-A, like the new unit at Joliet, burns highly volatile Central Illinois coal with a high ash content and low ash-fusion temperature.

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Pages with the Editors

FOLLOWING our annual custom, we have selected articles in this issue of the FORTNIGHTLY of special interest to our readers in the gas industry. It will be distributed at the time when members of the American Gas Association gather in St. Louis (October 7th to 9th) for their thirty-ninth annual convention. The leading article comes to us from the head of that organization, CLARE H. ZACHRY.

THERE probably is not a more zealous or active salesman for natural gas in the entire country than the congenial president of the American Gas Association. MR. ZACHRY makes his home in Dallas, Texas. He is also president of the Southern Union Gas Company and has been traveling back and forth across the nation during the past year making speeches on the virtues of natural gas—an industry in which he began his career thirty years ago. Born in 1895 in Pittsburg, Camp county, Texas, MR. ZACHRY, who is a self-educated accountant, went to work for the Muskogee National Bank then became vice president of the Aztec Oil Company of Tulsa and formed a partnership with L. E. Cahill in an accounting firm which handled the account of Southern Union Gas Company, which MR. ZACHRY joined in 1933.

C. H. ZACHRY

LESLIE F. STEMP

NOT only our gas industry readers but other utility people will doubtless find the article on the nationalization of the British gas industry (beginning on page 541) of special interest. The author, LESLIE F. STEMP, is legal adviser of the Gas Council. MR. STEMP is a graduate of University College, London. He was called to the British bar by the Middle Temple where he was a pupil of the late Lord Chancellor, Earl Jowitt. His article is in substance a restatement of an address made in London on July 25th to the Section of Public Utility Law of the American Bar Association.

* * * *

LARRY SHOMAKER, whose article on the consumer benefits of natural gas for electric generation appears on page 559, is a native of Illinois and graduated from the University of Wisconsin (PhB, '30). He has made his entire business career with Northern Natural Gas Company, of which he is now vice president.

* * * *

CLIFFORD V. COONS, whose article on gas appliance promotion begins on page 573, is the executive vice president of the Rheem Manufacturing Company and also president of the Gas Appliance

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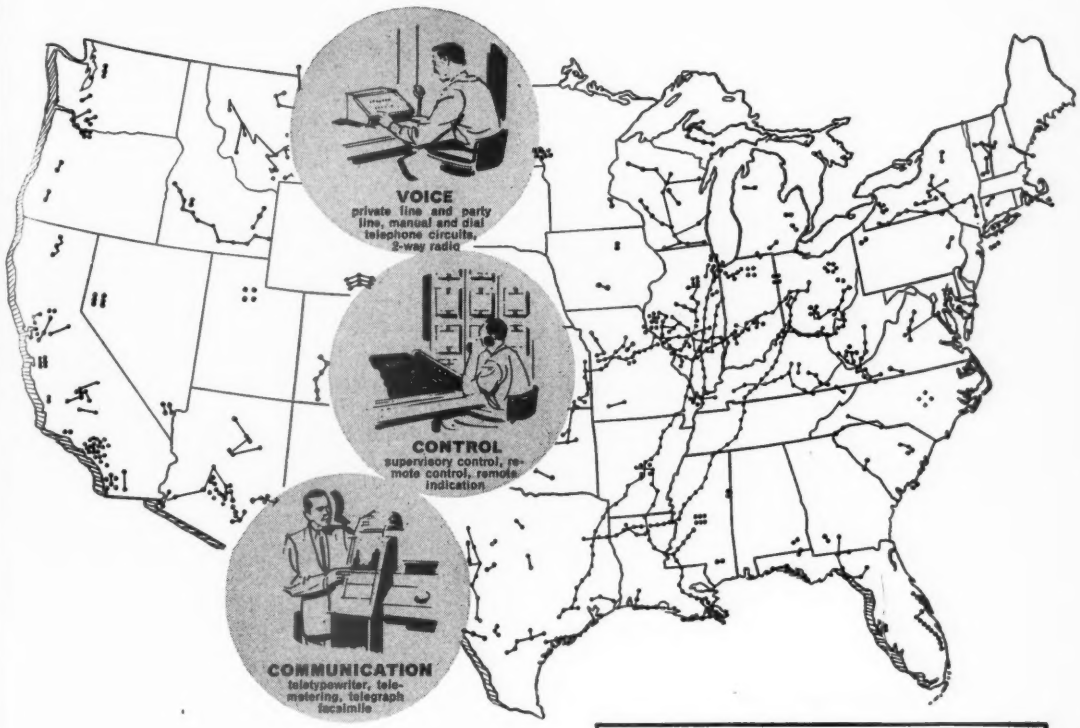
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Manufacturers Association for the current year. He is a native of St. Joseph, Missouri, where he attended St. Joseph College. He has been with the Rheem Company since 1934 and now makes his home in Rye, New York.

* * * *

FRANK C. SULLIVAN, whose article on public ownership in the natural gas field begins on page 578, is public relations director of the Southern California Gas Company. He was formerly a journalist by profession who taught classes in public relations at the University of California Extension. Prior to joining Southern California Gas he was special public relations representative of the California Public Utilities Commission.

* * * *

THE article on the controversial Harris-O'Hara Bill on page 593 comes to us from WILLARD F. STANLEY, president of Corporate Services, Inc. MR. STANLEY was formerly vice president of the Southwestern Public Service Company and is well known for his numerous articles on public utility finance which have appeared in the FORTNIGHTLY and other publications in the utility field.

REFERENCE to the Harris-O'Hara Bill reminds us that this legislation is quite likely to be the source of much controversy when the 85th Congress meets again at its second session next January. For one thing, regardless of the politics involved, the hard fact of natural gas supply

LARRY SHOMAKER

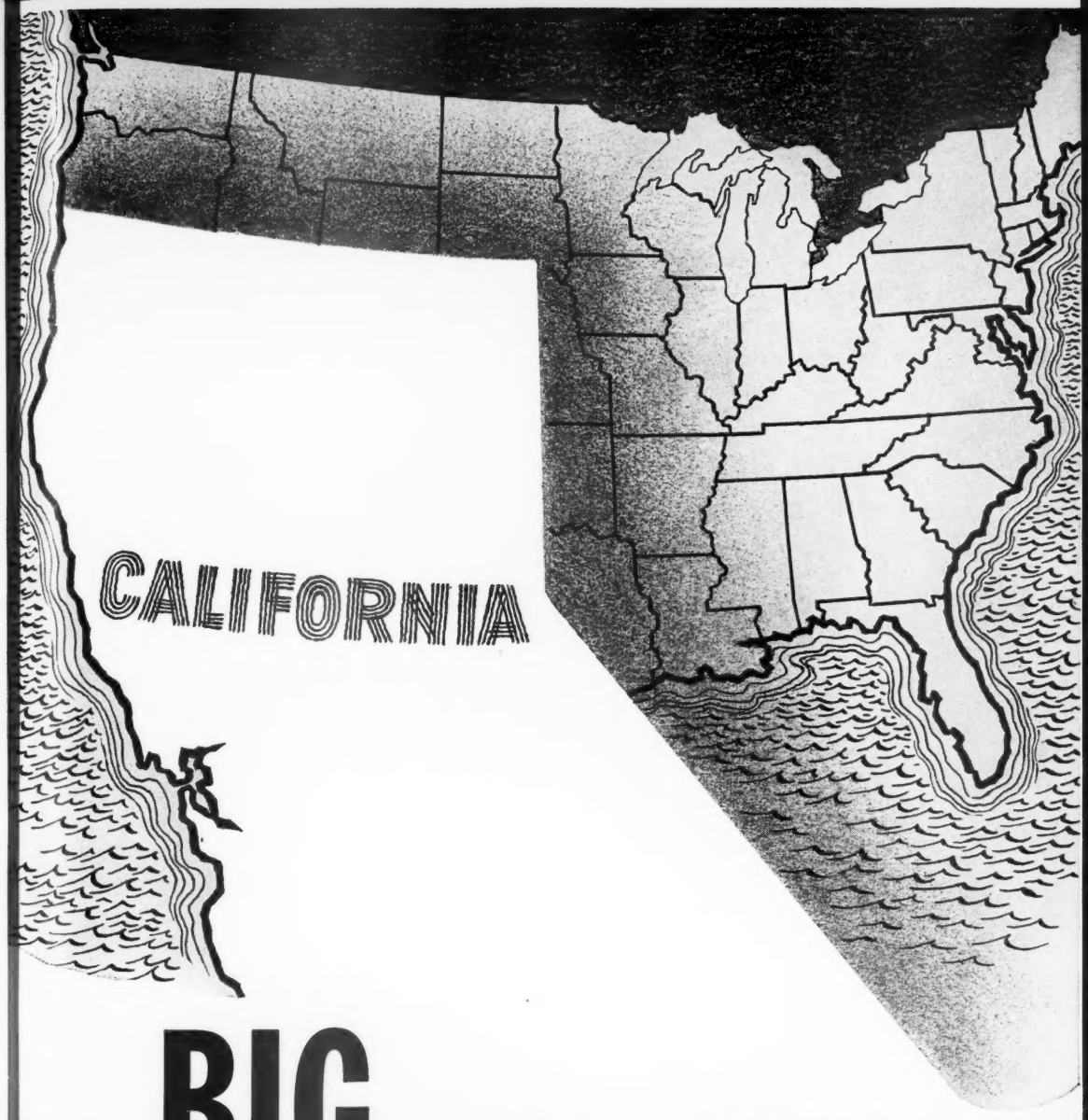
CLIFFORD V. COONS

and problem of dedication of future production to public service remain a stumbling block with those whose responsibility it is to regulate gas producers. The primary responsibility, of course, rests upon the Federal Power Commission. It did not ask for it. It did not apparently want it. And with all due respect to the U. S. Supreme Court, it is still a fair question whether Congress ever intended to give it to the FPC when it passed the Natural Gas Act.

BUT the U. S. Supreme Court has spoken and FPC jurisdiction over producers is now the law of the land. So far, Congress has not nullified this decision, despite the "near miss" of the vetoed Harris-Fulbright Bill in 1956 and the still pending Harris-O'Hara Bill. In view of the practical difficulties involved, is there no middle ground between full FPC jurisdiction and absolute repeal of such jurisdiction for rendering it virtually meaningless by amendatory legislation? There seems to be a good field here for the best efforts of legislators, regulators, various segments of the industry, and anybody else in a position to help find some common ground for a practical and acceptable way out of the present difficulty.

THE next number of this magazine will be out October 24th.

The Editors



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And the future holds some exciting plans . . . such as our $330 million pipeline that is planned to deliver Canadian natural gas to the California market.

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(October 24, 1957, issue)

★

OPPORTUNITY UNLIMITED—INDEPENDENT TELEPHONY

The independent telephone industry, this year celebrating its sixtieth anniversary, is no minor league business. It serves two-thirds of the area of the continental United States. Clive W. Haas, incoming president of the United States Independent Telephone Association, and manager of the Big Timber Home Telephone Company, describes the 4,400 independent telephone companies as a "vibrant force in a dynamic economy."

RELATIONSHIP OF STATE TO FEDERAL REGULATION OF COMMON CARRIERS

The Federal Communications Commission's jurisdiction is largely at the interstate level. State commissions having jurisdiction over telephone and telegraph matters are primarily concerned with intrastate aspects. There is a natural overlapping and this calls for a co-operative spirit in solving some of the joint problems. Rulom E. Larsen, director of utilities, Idaho Public Utilities Commission, discusses this federal-state relationship, with particular reference to the telephone industry.

TELEPHONE COMPANIES THAT EARN WELL, SERVE BETTER

The matter of adequacy of earnings is one that confronts most, if not all, companies, large and small. E. Hornsby Wasson, vice president of American Telephone and Telegraph Company, states the case for better earnings and how a consistently low return can affect company decisions and service. As one telephone company official observed: "When profits shrivel, service has to wither on the line." This homily is the basic text treated by Mr. Wasson in the forthcoming, illustrated feature.

BEDROOMS CAN ADD 70 MILLION TELEPHONES

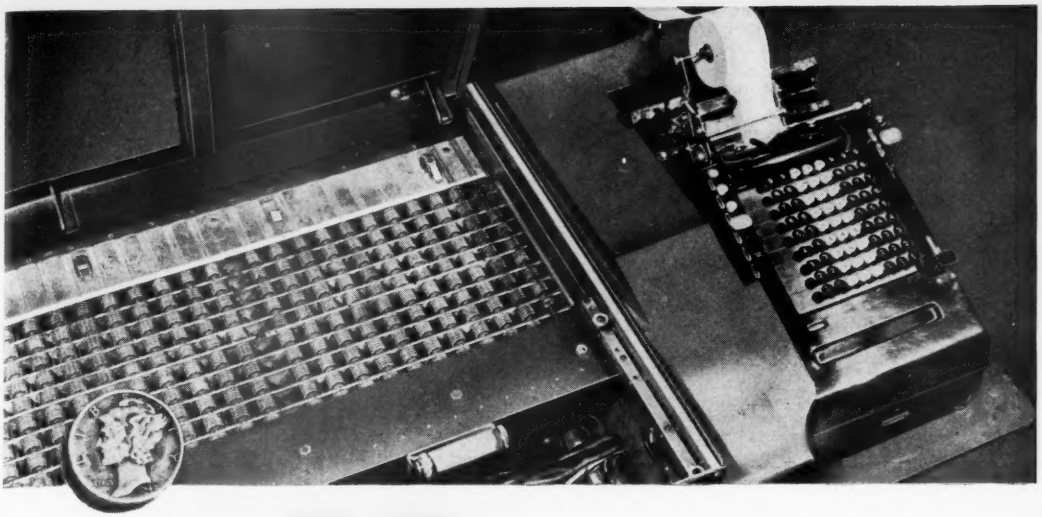
The production-minded telephone industry has found that certain principles long used elsewhere can be adapted to telephone company use. Independent and Bell system telephone companies have found this path. What is being done in the selling line is told ably by James H. Collins, a professional writer with many fine telephone and other utility industry anecdotes to his credit.

NEW VOICES FOR "THE SCENIC INCH"

The editors of the FORTNIGHTLY asked a capable business writer, L. Glen Snarr, Salt Lake City, Utah, to write an on-the-spot account of co-operation between two independent telephone companies and two Bell system companies. Jointly these companies have provided the needed communications for a 1,487-mile natural gas pipeline. Traversing the western half of the nation from the desert Southwest to the evergreen Pacific Northwest as it does, the terrain crossed by the pipeline is so eye catching that it was dubbed "The Scenic Inch."

★

Also . . . ***Special financial news, digests, and interpretations of court and commission decisions, general news happenings, reviews, Washington gossip, and other features of interest to public utility regulators, companies, executives, financial experts, employees, investors, and others.***



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We can conclusively prove to you that our "One Step" method of rate analysis will *make money for the company and you* — all we need is a sample of your billing sheet, a copy of rate schedules and an estimate of the number of customers billed at each rate, and your frequency table requirements. From these we can give you an estimate of costs and a time table for production — both will be eye-openers! Write Dept. P today.

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Remarkable Remarks

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—MONTAIGNE

Excerpt from First National City Bank Monthly Letter, published by The First National City Bank of New York.

"The taxmanship movement has a simple foundation. Congress has been remiss in getting tax rates down to tolerable levels. So the enterprising citizen is driven to do it himself."

GEORGE M. HUMPHREY
Former Secretary of the Treasury.

"I wouldn't be in favor of putting them [price-wage controls] back. I think the American people are better judges than some bureaucrats in Washington of what they can properly buy, what they can properly pay, and what they can properly owe."

AUGUSTUS C. LONG
Chairman, The Texas Company.

"During the past ten years the world petroleum industry has invested more than $42 billion in the United States and almost $20 billion abroad. These total capital expenditures of $62 billion since 1946 are larger, by far, than the investment program carried out by any industry other than public utilities."

ROBERT G. ELLIOTT
Chief engineer, Southern Bell Telephone & Telegraph Company.

"If it were not for the dial system, which handles approximately 90 per cent of all the calls, every girl high school graduate of every high school in the country would have had to join the ranks of telephone operators every year in order to keep up with the telephone's development and keep the system operating effectively."

PHILIP M. TALBOTT
President, Chamber of Commerce of the United States.

"The pre-emption of revenue sources by the national government has severely limited the capability of the states to develop. We recommend that gift and estate taxation as a minimum, be turned over completely to the state governments. It is also suggested that study and consideration be given to other tax sources which may be readily transferrable."

DOUGLAS MACARTHUR
Chairman of the board, Sperry Rand Corporation.

"The fundamental and ultimate issue at stake . . . is not merely our money—it is liberty, itself; the excessive taxation of an overgrown government *versus* personal freedom; . . . the free enterprise system or the cult of blind conformity; the robot or the free man. . . . Excessive taxation produces results somewhat resembling the evils of slavery and serfdom in days of old. . . . This begins to resemble the Soviet-forced labor system."

WILLIS GALE
Chairman of the board, Commonwealth Edison Company.

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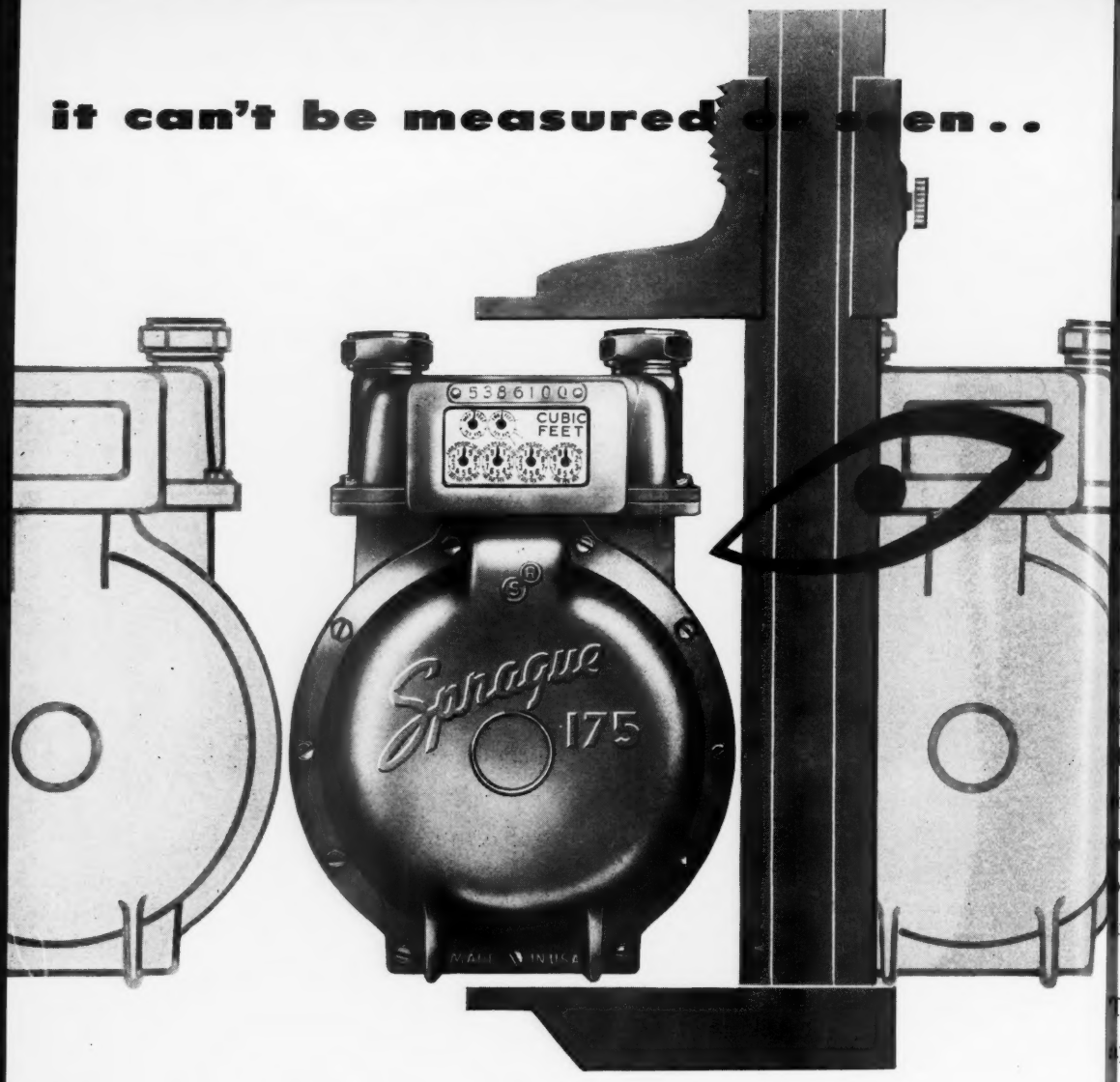

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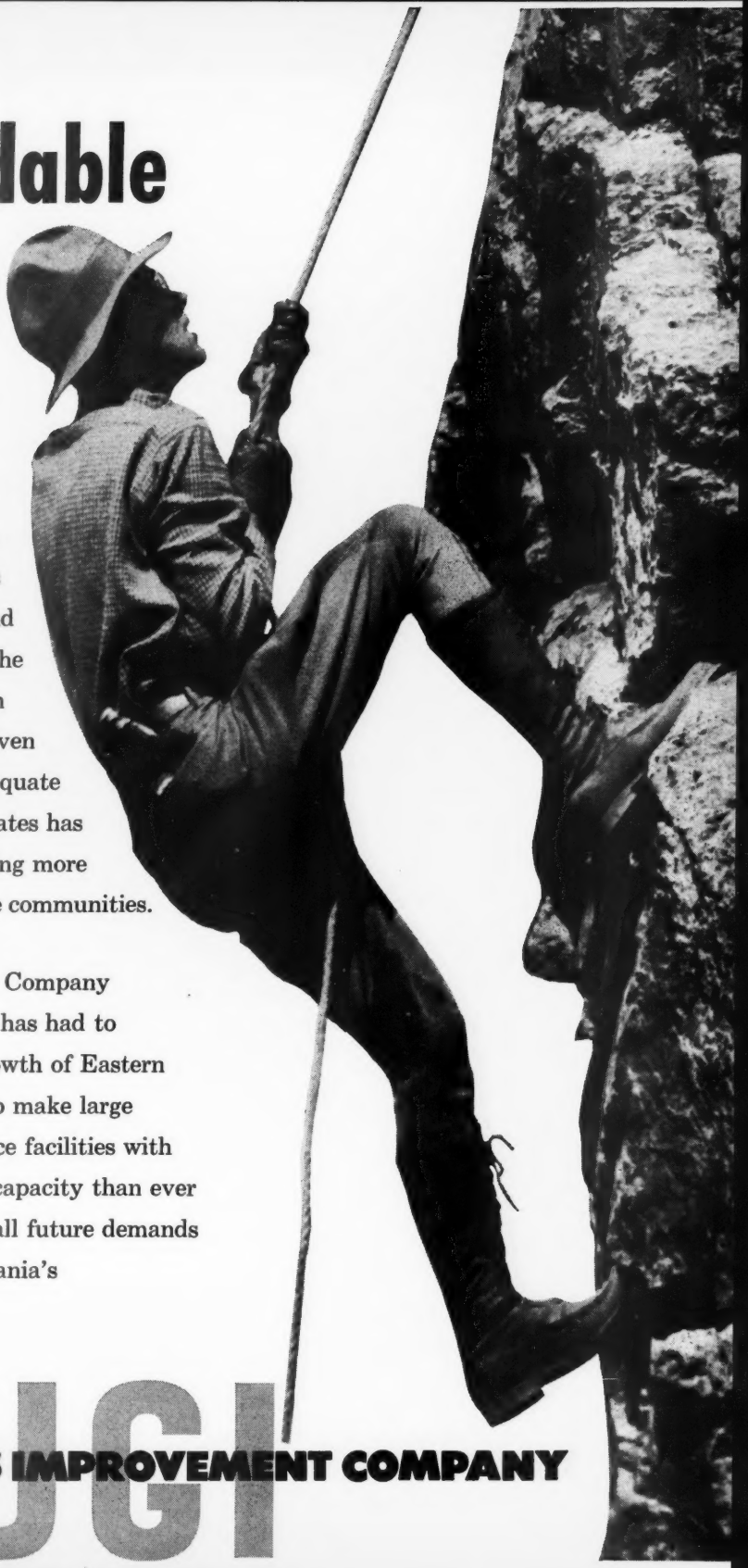

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From initial Survey to final completion Fish Service Corporation supervised all steps in converting Spokane Natural Gas Company from an obsolete Propane-air utility to a modern, efficient natural gas distributing system.

IN EARLY 1953 Spokane Gas and Fuel Company saw little hope for the future. Sales were declining, the system was obsolete, cash was low, and prospects were so dim new financing was hard to get.

Then, with the promise of Natural Gas via pipeline from the San Juan Basin, things began to look up. But the company had little experience in planning, financing and executing the modernization required to take advantage of the new supply.

The management then turned to experts. Fish Service Corporation was retained to take charge of all phases of the change.

First Fish made a survey. Then, based on that survey, new financing was obtained. On behalf of the company, Fish went before the state regulatory commission and the F.P.C. The system was modernized and enlarged with supervision and inspection by Fish. Rate structures were calculated by Fish, and the company organization was improved. Even the name was changed to the Spokane Natural Gas Company.

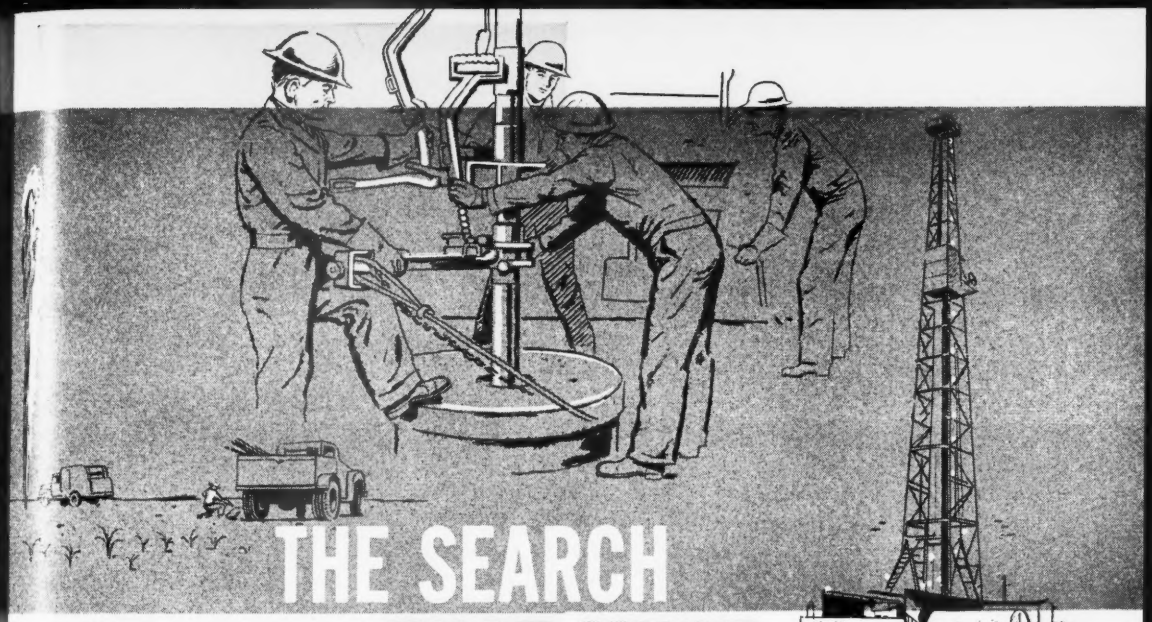
Results were gratifying. Demand went up immediately. By December 1957, demand is expected to reach a peak of 37 million cubic feet per day. A sick, declining company had been transformed to a vigorous, growing one.

This may be an extreme example, but Fish Service Corporation may be able to help you, too. Why not call us and find out.

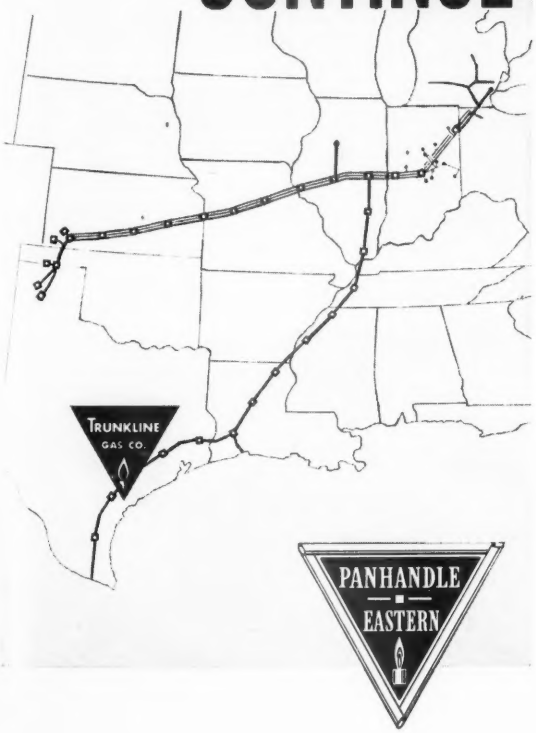
FISH SERVICE CORPORATION

HOUSTON, TEXAS

fish SERVICE CORPORATION



THE SEARCH THAT MUST CONTINUE



Gas Distributors, industries and the consuming public have a common interest in being assured of a dependable future supply of natural gas.

The growth in the use of natural gas has been tremendous; interstate natural gas pipelines are now transporting over 8 trillion cubic feet of natural gas annually and trillions more are consumed intrastate.

Producers must search for and develop more than 12 trillion cubic feet of natural gas annually merely to maintain existing reserves of natural gas. Such a tremendous task requires proper incentives and freedom from burdensome Federal regulations. Congressional leaders, the Federal Power Commission and all branches of the natural gas industry — including the distributing companies — recognize this fact.

Proposed legislation, which will accomplish this important objective, is the Nation's best assurance of a continuing progressive natural gas industry.

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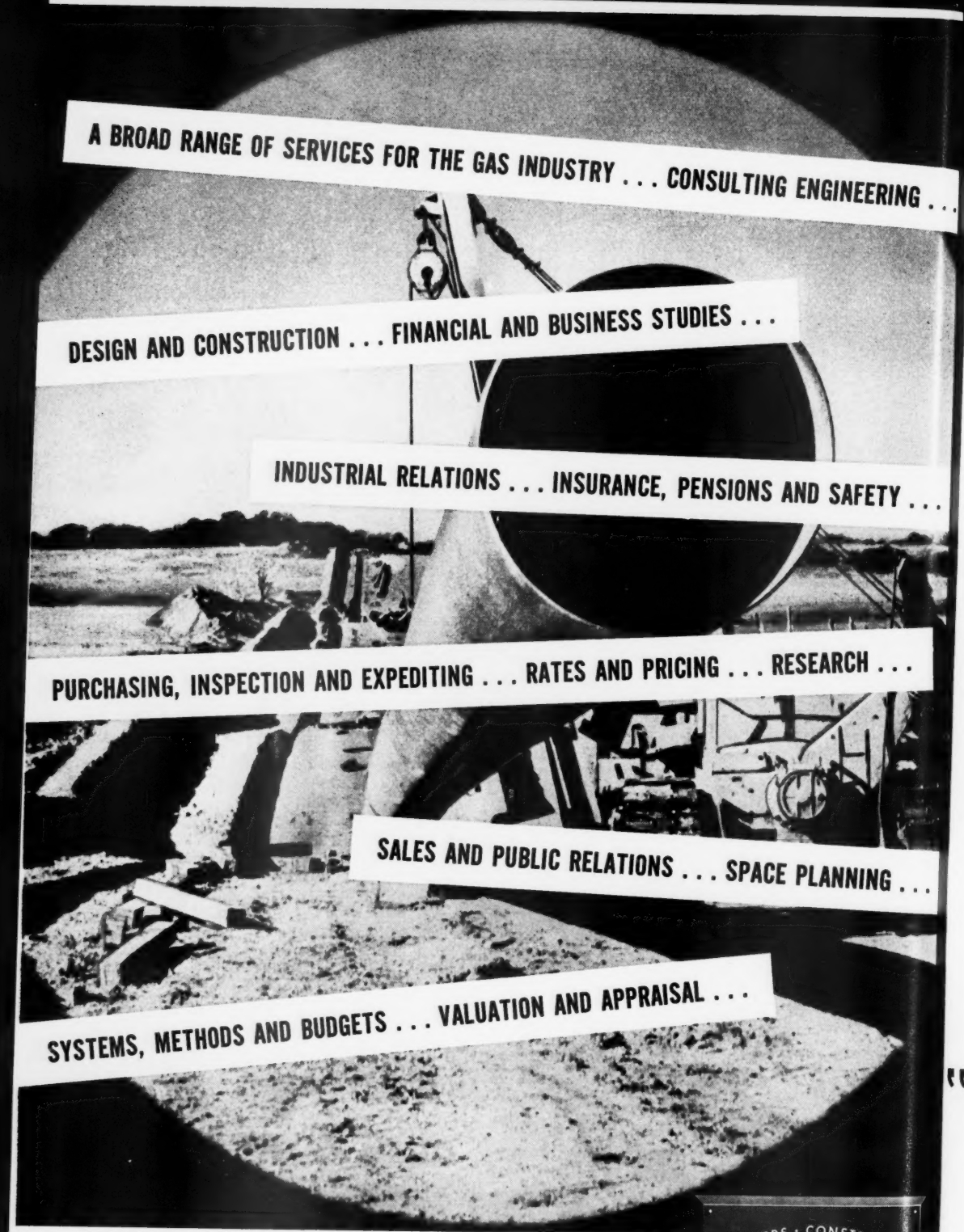
Producer, processor, transporter, supplier of natural gas, serving industries and utilities in 12 states.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Progress Report on "Operation 65"

"Operation 65" is a ten-year forecast and plan of action by The Dayton Power and Light Company. We're "shooting for" 1965 natural gas sales of 51,900,000 MCF's—up 57% in 10 years.

Highly-favored West-Central Ohio served by DP&L has grown and prospered at a rate exceeding national averages. Factors are favorable for continued growth due to "built-in stabilizers"—a balanced economy of diversified industry and agriculture. DP&L will be *ready* with more natural gas *before* it is needed!

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► A new and different approach to the educational needs of utility employees — called THE P.U.R. GUIDE — is now being used by many companies. Somewhat descriptively, the GUIDE is referred to as "a journey of understanding." It takes the user through the economics of public utilities and through many other non-technical phases of utility operation. It was organized by and is issued under the general supervision of an experienced staff of specialists.

► THE P.U.R. GUIDE program is a systematically and consecutively arranged series of weekly lessons, in pamphlet form, offering a simplified, progressive, step-by-step story about the nature of the utility business, its important place in the American economy, the present conditions under which it is conducted, its day-to-day objectives and responsibilities, the existing problems with which it is confronted and other current subjects arising in connection with organization, financing, management, operation and regulation. This program adds guidance to experience in the development of the "management team."

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- ► Occasional reprints from Public Utilities Fortnightly
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Comments about THE P.U.R. GUIDE

One of the best educational programs we have had in years.
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We all feel that this is a program that is needed in the public utility industry.
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I know of no better source for obtaining information it contains.
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President

All of the men are interested and believe the studies to be quite worthwhile to them.
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I am sure the total series of 52 will prove of inestimable value to the utility industry.
Vice President & General Manager

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We feel that THE P.U.R. GUIDE training program is being well received.
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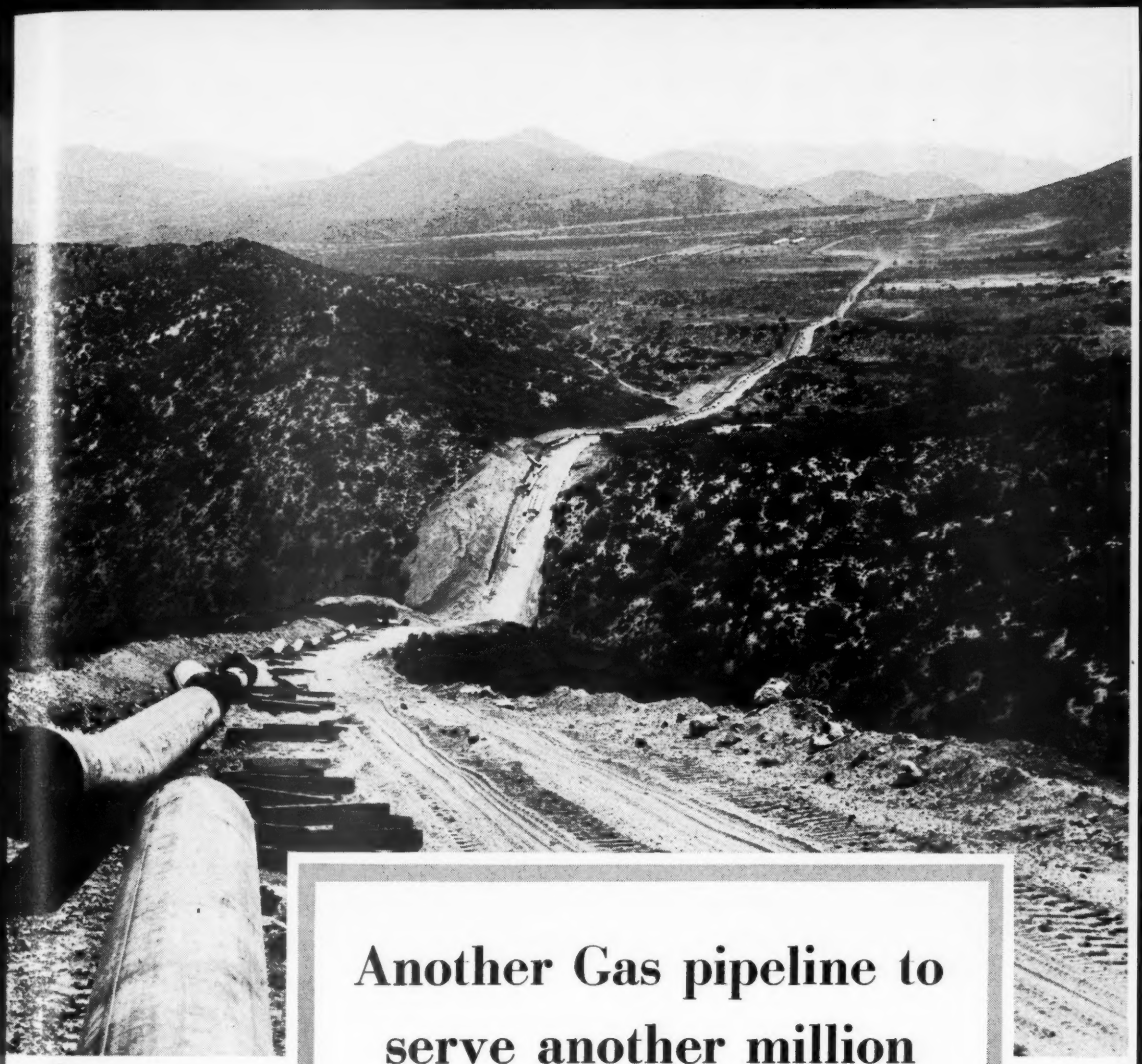
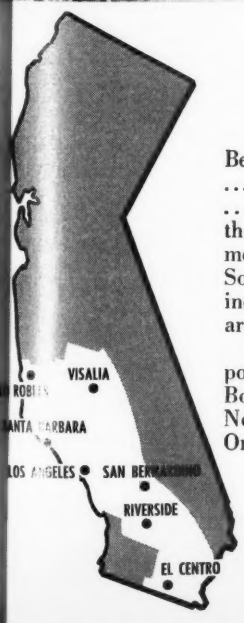


Another Gas pipeline to serve another million



Between Needles and Newhall, California ... 241 miles across deserts and mountains ... stretches a newly-completed pipeline that brings new Gas supplies from the tremendous San Juan Basin to over 2,000,000 Southern California homes, businesses and industries and to the 1,000 new residents arriving here every day.

Los Angeles County alone now has a population equal to the combined cities of Boston, Cleveland, St. Louis, Baltimore, New Orleans, Minneapolis and St. Paul. Orange County, until recently more agricultural than metropolitan, now has close to a half million residents and is growing steadily. So are the ten other California counties served by Southern California Gas Company and Southern Counties Gas Company.

These Companies are anticipating the growth here through far-sighted construction like the Needles-Newhall pipeline and will be able to handle the cooking, water heating, house heating and other Gas requirements of every resident as efficiently tomorrow as they do today.

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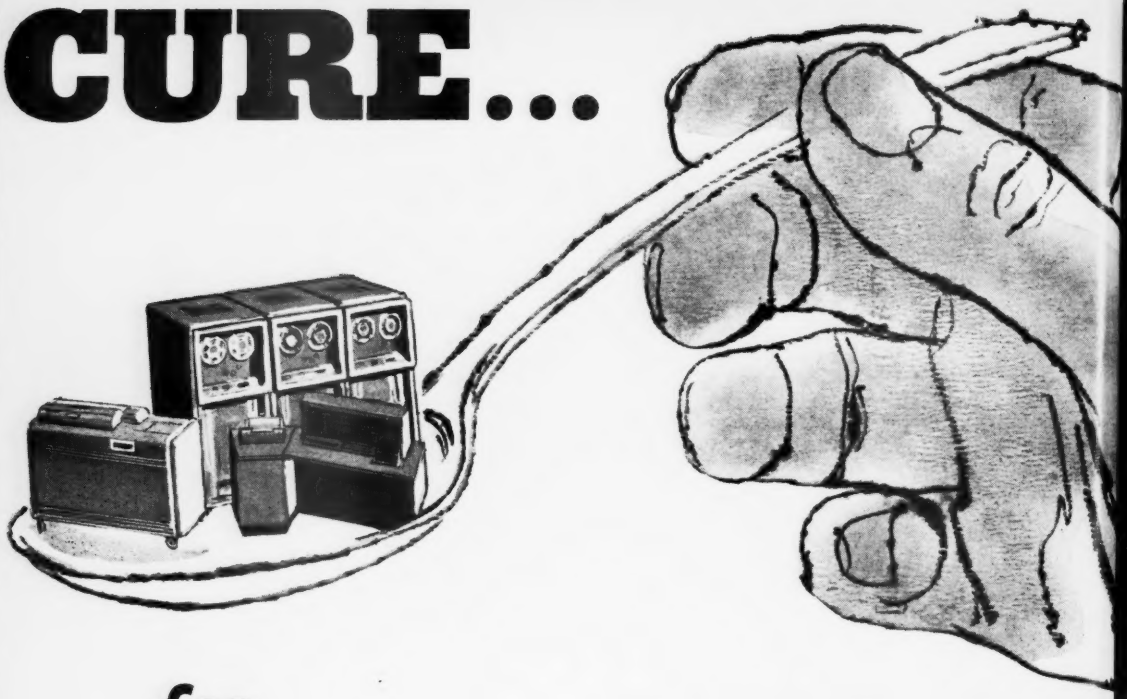

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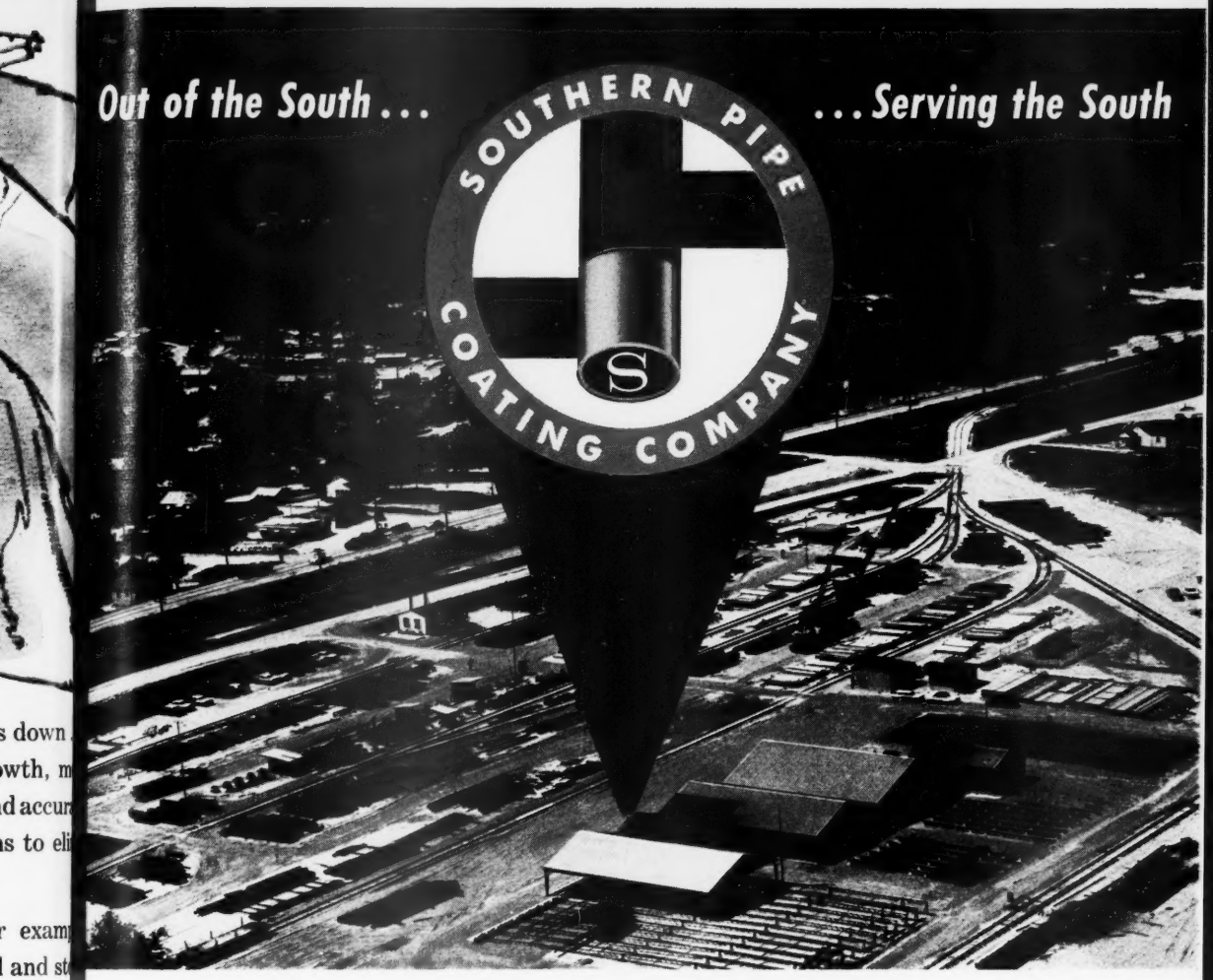

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growth in that part of America's Heart lan
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homes, businesses, and industries it serve
Last year, that figure rose to 605 billion.
1961, it is estimated that the System's custo
ers will require 845 billion cubic feet annuall

Columbia Gas System companies look to th
future by planning and building to meet the
increasing needs for natural gas . . . to kee
pace with the phenomenal growth of Ame
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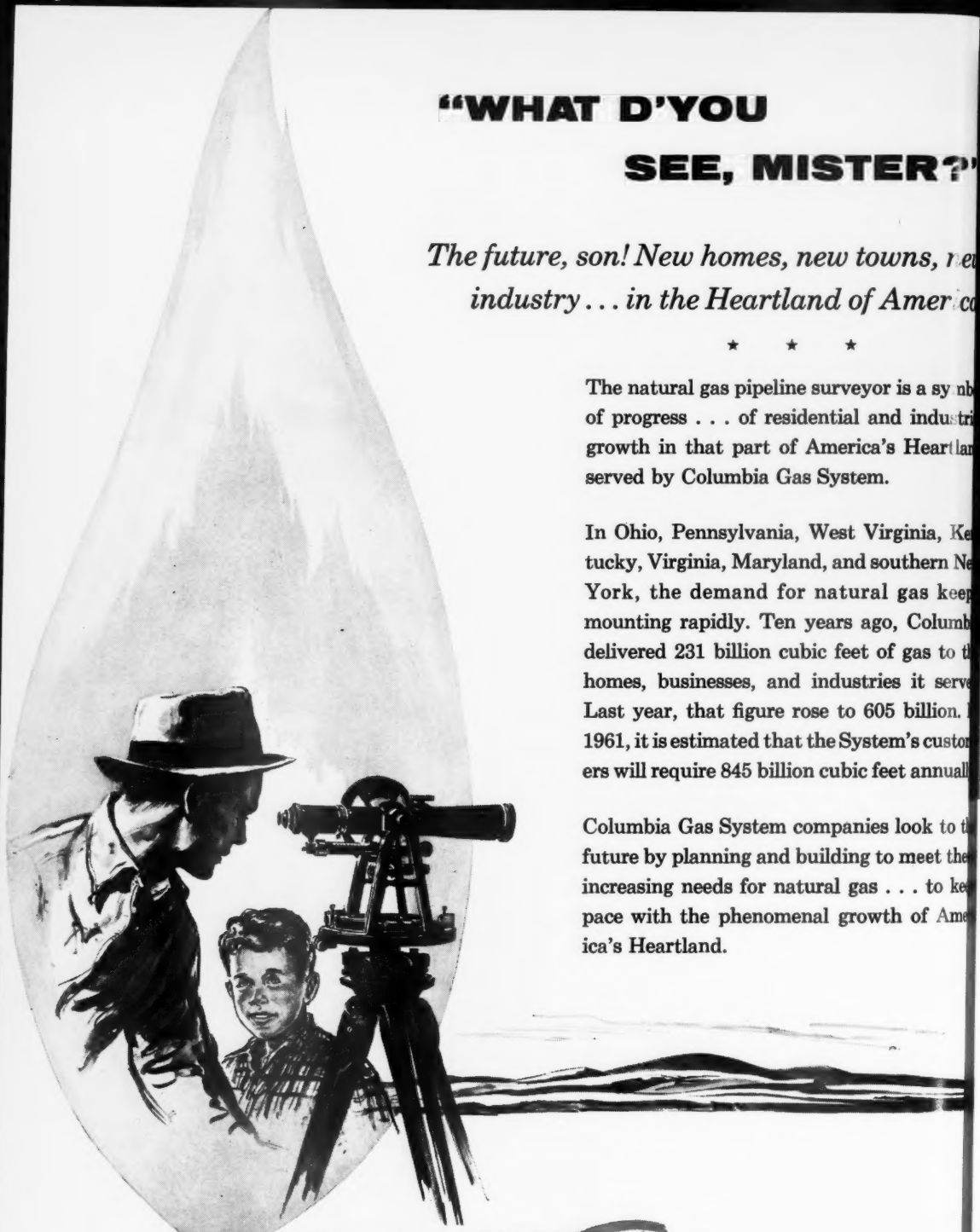

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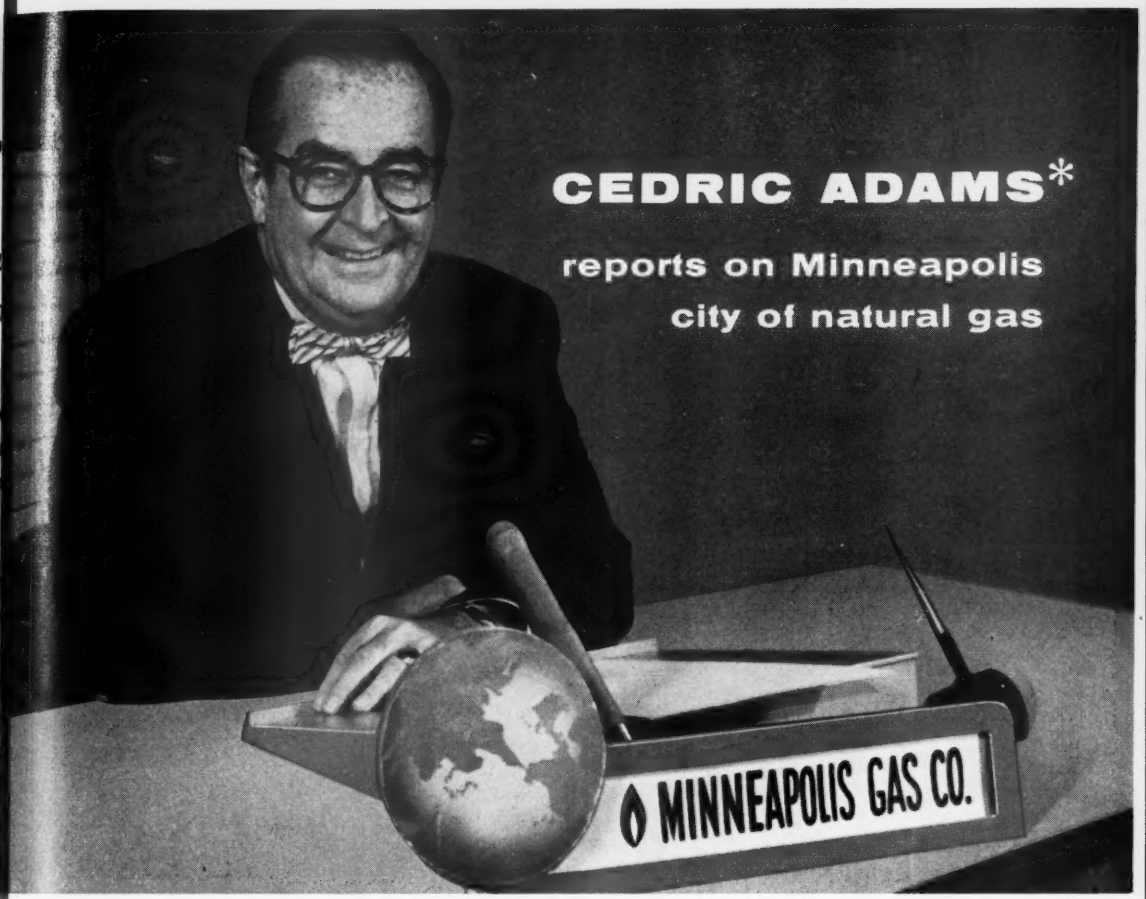

Cedric Adams best-known news personality in the Northwest appears on behalf of the Minneapolis Gas Company over CBS WCCO-TV on "Playhouse 90" and Dinnertime News

The city of Minneapolis celebrated its centennial year in 1956 and the Minneapolis Gas Company is proud to have played a part in these 100 years of remarkable growth. 1956 was a good year for the community and the gas company. Gas sales increased from 53,086,254 MCF in 1955 to 55,178,674 MCF in 1956. Number of heating customers increased from 153,103 to 161,420 and total number of customers increased from 194,716 to 199,726.

It's a pleasure to work with a company whose name is synonymous with "good service." As a happy all-gas home owner, I can say gas service is tops in Minneapolis.

Cedric Adams

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GOOD SERVICE

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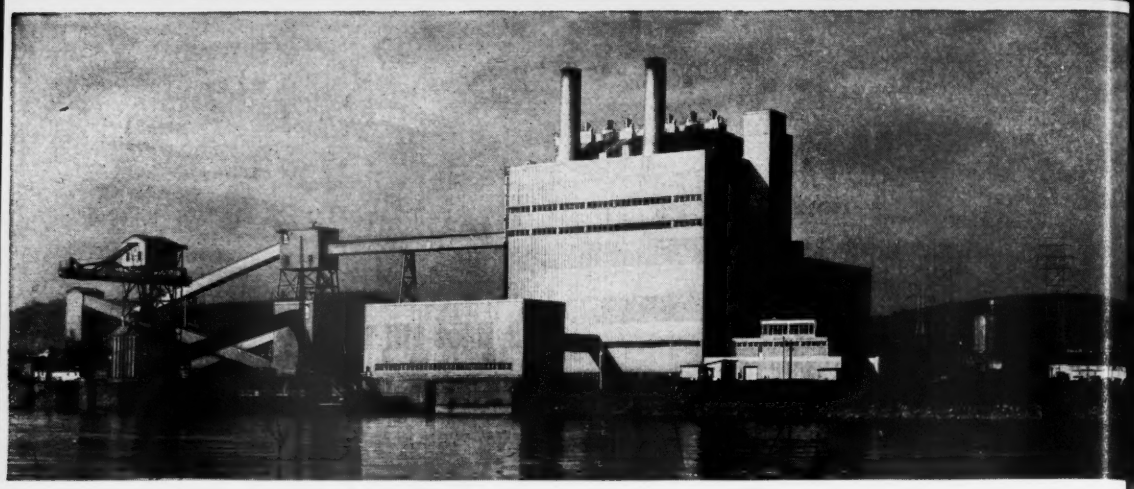

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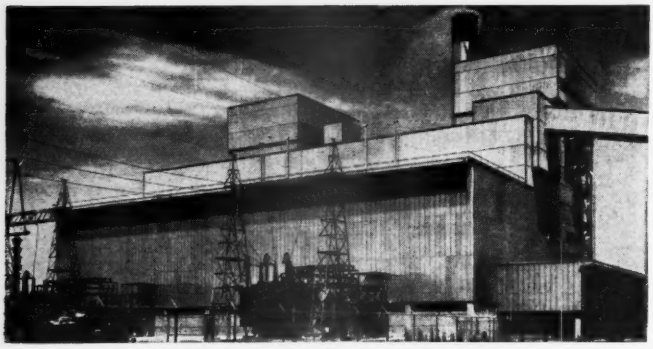
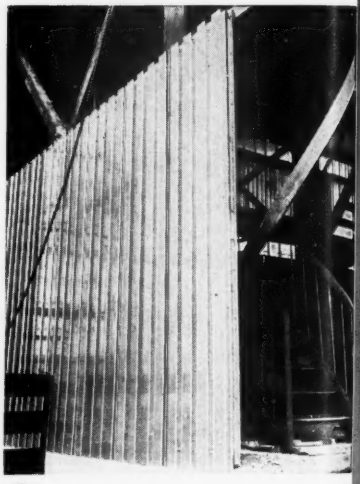


Q-Panel walls grace the new Elrama P Plant (above) near Pittsburgh. It was desig by Duquesne Light Company's Enginee and Construction Department. The Dr Corporation was General Contractor.



Q-Panel walls (above) go up quickly in any weather because they are dry and hung in place, not piled up.

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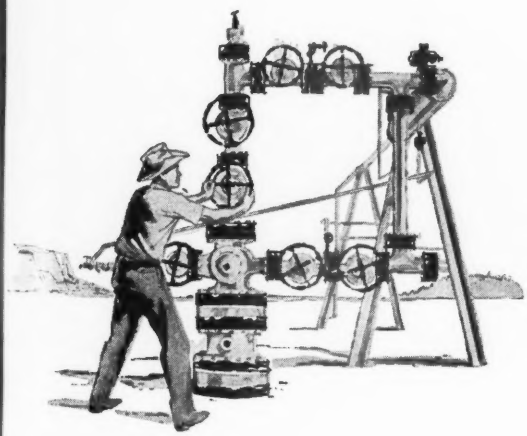
Since 1928, when El Paso Natural Gas Company was formed, population in these nine states has almost *doubled.* Looking ahead, this new West sees its present population increasing by almost 30% in the next 10 years.



To help keep the West supplied with the energy required for future growth, El Paso Natural Gas Company is engaged in continuing and intensive programs to augment its large reserves of natural gas. In the past 10 years despite the tremendous increase in sales to El Paso's market, our committed reserves have increased over 100%. The rapid rise of these reserves is equalled only by the unparalleled upsurge in Western energy requirements.

Intensive exploration for, and acquisition of, natural gas reserves are just two of many El Paso activities designed to help serve the energy needs of the West.

El Paso and its subsidiaries operate a network of natural gas pipelines, the world's most efficient means of transportation. Other activities are conducted in exploration for and supply of petroleum, in refining, in the marketing of petroleum products, in the manufacture of petrochemicals—and in the search for and processing of uranium, a fuel of tomorrow.

El Paso Natural Gas Company and its subsidiaries serve California, West Texas, Arizona, Idaho, Nevada, New Mexico, Oregon, Utah and Washington.

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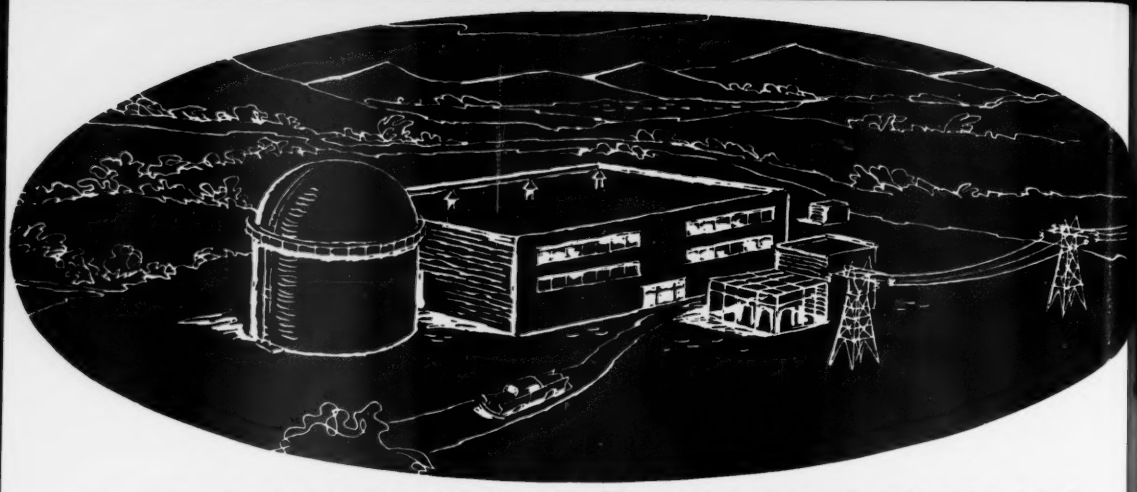

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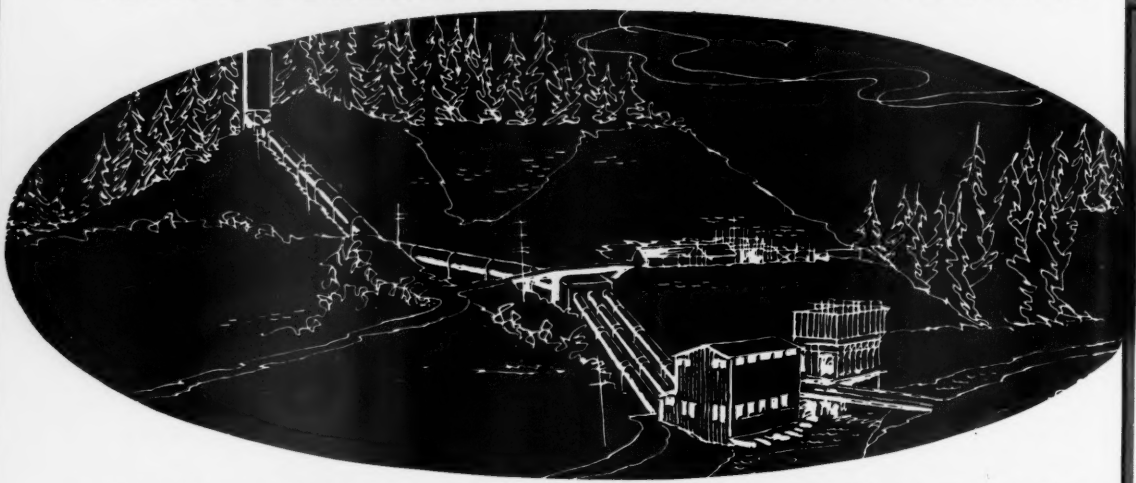

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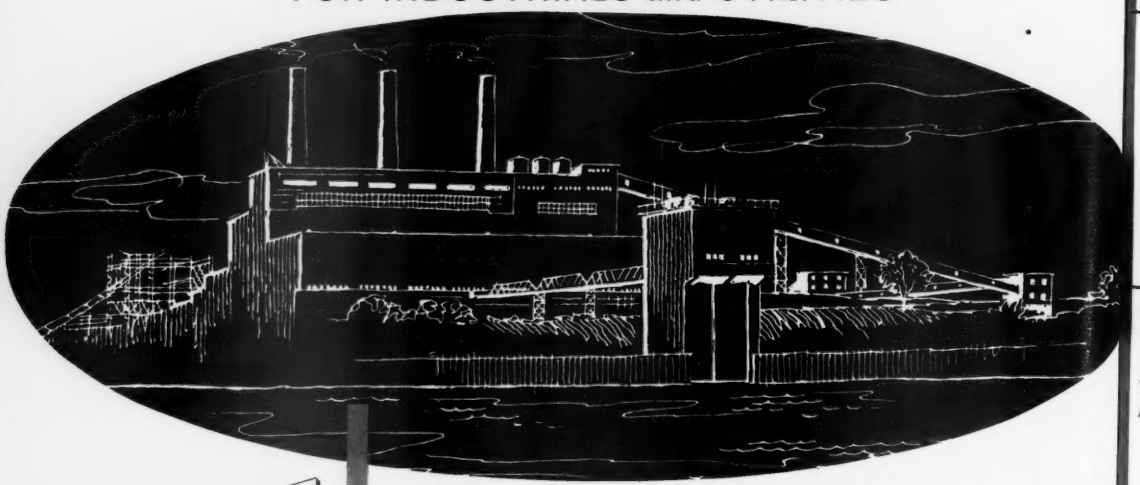

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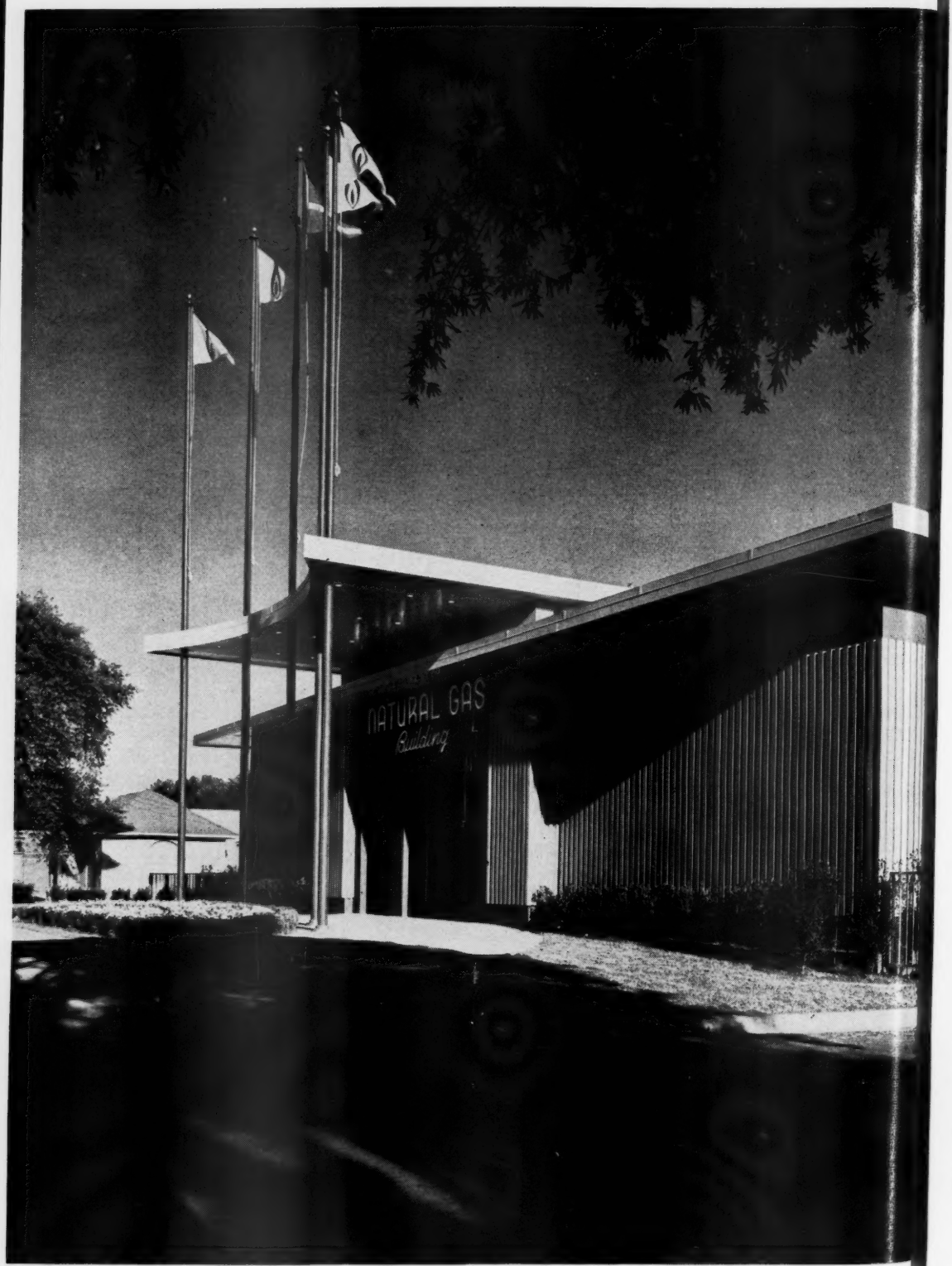
OCTOBER

Thursday—10 *California Natural Gasoline Association begins annual fall meeting, Pasadena, Cal.*	**Friday—11** *Southeastern Electric Exchange ends 2-day accounting conference, Charleston, S. C.*	**Saturday—12** *American Nuclear Society will hold winter meeting, New York, N. Y. Oct. 28-31.* ***Advance notice.***	**Sunday—13** *Rocky Mountain Electric League begins annual convention, Colorado Springs, Colo.*
Monday—14 *United States Independent Telephone Association begins annual convention, Chicago, Ill.*	**Tuesday—15** *Fifth Gas Measurement Institute begins, Liberal, Kan.*	**Wednesday—16** *National Association of Railroad and Utilities Commissioners will hold annual convention, Memphis, Tenn. Oct. 28-31.* ***Advance notice.***	**Thursday—17** *American Water Works Association, Canadian Section, begins meeting, Halifax, Nova Scotia, Canada.*
Friday—18 *Wisconsin Utilities Association, Gas and Electric Operation and Sales Sections, ends 3-day convention, Milwaukee, Wis.*	**Saturday—19** *American Petroleum Institute will hold meeting, Chicago, Ill. Nov. 11-14.* ***Advance notice.***	**Sunday—20** *Federal Bar Association, Committee on Natural Resources, will hold a briefing conference on water resources, San Francisco, Cal. Nov. 14, 15.* ***Advance notice.***	**Monday—21** *National Safety Congress begins, Chicago, Ill.*
Tuesday—22 *Texas Association of Broadcasters begins meeting, Galveston, Tex.*	**Wednesday—23** *American Water Works Association, West Virginia Section, begins meeting, Wheeling, W. Va.*	**Thursday—24** *Engineers Joint Council begins annual meeting and general assembly, New York, N. Y.*	**Friday—25** *Virginia Independent Telephone Association ends 2-day annual convention, Roanoke, Va.*



Courtesy, United Gas Corporation

Natural Gas Goes to the Fair

The Natural Gas building on the Louisiana State Fair grounds at Shreveport.

Public Utilities
FORTNIGHTLY

VOL. 60, NO. 8 OCTOBER 10, 1957

The Gas Industry: Inventory and Outlook

From the standpoint of plant investment the gas utility and pipeline industry ranks fifth among the largest industries in the United States. The phenomenal growth of this industry over the past decade is to be exceeded only by the accomplishments to be garnered in the years ahead.

BY C. H. ZACHRY*
PRESIDENT, AMERICAN GAS ASSOCIATION

THE dynamic growth of the gas industry in recent years has been little short of phenomenal, and there is every reason to expect this rapid expansion to continue unabated in the foreseeable future.

I am sure readers of the FORTNIGHTLY would prefer to have facts and figures instead of glowing adjectives in an appraisal of just where the industry stands today and where we expect to go from here. The facts, therefore, will be permitted to speak for themselves.

The gas utility and pipeline industry today ranks, from the standpoint of plant investment, as the fifth largest industry in the United States. Our assets are about $19 billion, compared with slightly less

*Also president of Southern Union Gas Company. For additional personal note, see "Pages with the Editors."

than $7 billion in 1947 and $5 billion in 1937.

And looking directly ahead, we expect to be a $24 billion industry by 1960, perhaps sooner.

Throughout the United States today, the gas industry is serving more than 39 million customers in homes, business establishments, and industrial plants. Some 30 million of these customers are supplied with gas from 1,250 individual utility companies and approximately 100 transmission companies. Thousands of other companies distribute "bottled gas" to some 9 million customers who live beyond the reach of utility mains.

As of today, about 90 per cent of all utility customers use natural gas. More than 1,100 companies distribute natural gas to over 26 million customers. Approximately 40 companies regularly manufacture their own gas and distribute straight or mixed with natural gas. Another 80 companies serve liquefied petroleum through utility mains.

CURRENT gas industry sales to ultimate customers—not including gas that is sold for resale—are about $4 billion a year. Ten years ago sales were less than $1.5 billion. Looking back to 1937, we find that figure was only $800 million. In other words, sales today are almost triple those of 1947 and five times as great as in 1937.

This tremendous growth in customers and sales has presented a mighty challenge for greatly increased facilities of all types. The manner in which we are meeting the challenge is indicated in our construction expenditures.

Over the next four or five years, gas industry construction is expected to run about $2 billion annually. Nearly one-third of this construction will be financed by new investment from internal funds, more than half from new debt issues, and the remainder from new equity.

Construction this year will probably amount to over $2 billion. Ten years ago it was only $758 million, and in 1937 it was only $97 million—only one-twentieth of the current figure. An estimated $1,028,000,000 of this year's outlay will be for transmission facilities and $560 million for distribution facilities.

The forecast for a 10-year period ending in 1965 calls for total construction expenditures of $19 billion, with $8 billion of this going for transmission facilities and about $7 billion for distribution.

Steady expansion has stretched the industry's vast network of field, gathering, transmission, and distribution mains to more than half a million miles—or enough to circle the earth 21 times. We have extended our mains about 200,000 miles since 1947 and within the next ten years the pipeline network will spread to well over three-quarters of a million miles.

IT is essential, of course, that we have abundant supplies of gas to serve our millions of customers—and this brings us to the important subject of natural gas reserves.

The latest report on natural gas reserves from the American Gas Association concludes that the nation's proven reserves have reached an all-time high of 238 trillion cubic feet.

The U. S. Bureau of Mines says the total available remaining supply of natural gas within the United States is at least 850 trillion cubic feet. The Bureau of Mines points out that the figure does not include supplies from Mexico and Canada

¶ *"The gas utility and pipeline industry today ranks, from the standpoint of plant investment, as the fifth largest industry in the United States. Our assets are about $19 billion, compared with slightly less than $7 billion in 1947 and $5 billion in 1937. And looking directly ahead, we expect to be a $24 billion industry by 1960, perhaps sooner. Throughout the United States today, the gas industry is serving more than 39 million customers in homes, business establishments, and industrial plants."*

available for export to the United States. The Province of Alberta alone may eventually show reserves of 100 trillion cubic feet.

Another significant appraisal of reserves was made recently by Lyon F. Terry, vice president, and John G. Winger, petroleum economist, of the Chase Manhattan Bank. This study concludes that "the supply recoverable from presently proved reserves and from future discoveries in the United States, including offshore production, will exceed 1,200 trillion cubic feet."

It is interesting to note that in the past eleven years, despite a tremendous increase in production, our proven reserves have shown an over-all net increase of 89 trillion cubic feet. Let us look, for example, at what happened in 1956. Production reached an all-time record of about 11 trillion cubic feet; meanwhile, new discoveries, plus extensions and revisions of earlier estimates, amounted to 25 trillion cubic feet.

As a result, we showed a net gain of 14 trillion cubic feet in proved reserves for the year.

Underground storage operations continue to be an important phase of the distribution picture. Last year about 557 billion cubic feet of gas was pumped into storage to be used as needed during periods of peak demand. The amount injected was about 65 billion cubic feet more than the amount withdrawn.

The gas industry's efforts to provide maximum service for millions of Americans require a great investment in each customer and each of its 202,000 employees. The investment per customer figures out to an average of $55 in facilities to provide one dollar's worth of gas a month.

Plant investment per employee is over $70,000.

The growth of our industry is not the result of sitting back and waiting for things to happen. Through research and development of up-to-the-minute gas appliances and equipment, we believe we are *making* things happen.

One specific instance will illustrate what the gas industry is doing to make things happen. For several years, we have been very much aware of the enormous potential offered by the fast-growing demand for air conditioning. This potential has been virtually untouched. Surveys show that less than one per cent of our country's 35 million homes have central air conditioning—less than 5 per cent have room

units; less than one per cent of U. S. factories are air conditioned; and nearly one million hotel rooms do not have air conditioning.

The possibilities of air conditioning are almost fantastic. Air-conditioned sidewalks are being built in commercial and shopping centers, and this cool comfort has even been built into an 80-seat section of the football stadium at Baylor University.

The gas industry derives a substantial portion of its revenues from gas used for heating. This means greatly reduced demands during warm weather. We know that gas air conditioning offers the opportunity for working toward a year-round level of gas consumption.

The American Gas Association and air-conditioning equipment manufacturers spent $1.5 million on gas air-conditioning research in 1956. This year we have intensified our efforts. AGA recently doubled its previously planned appropriation and decided to spend $750,000 on its gas air-conditioning development program during 1957. This research, incidentally, is carried on under AGA's Promotion, Advertising, and Research Plan—we call it the PAR Plan, for short.

Through this PAR Plan, the gas industry will also spend about $4 million for promotion and national advertising this year, including our sponsorship of "Playhouse 90" on nation-wide television.

OUR appliance and equipment sales potential is not, by any stretch of imagination, confined to air conditioning. Compared with about 100 million gas appliances in use today, our potential sales —mostly through gas appliance dealers— are 300 million additional gas-burning units in a 20-year period through 1975.

The survey of potential sales by 1975 estimates a market for 80 million gas water heaters, 25 million central heating units, 21 million floor and wall furnaces, 54 million space heaters, 17 million clothes dryers, and 6 million incinerators. This adds up to a promising sales picture for everybody connected with the gas industry.

It is obvious that sales, unlike the modern gas appliance itself, are not automatic. It will require earnest effort, day after day, to translate this huge potential into profitable reality. However, I am confident that the gas industry possesses the ambition, ability, and enthusiasm to achieve such goals.

THE zeal of our gas utility companies is supported by the effective efforts of AGA in advertising, promotion, and public information activities. These activities are helping us demonstrate the merits of our efficient and economical fuel, gas service and gas appliances. We know we have fine products and services and we want others to know about them. Little wonder that we are adding about one million new customers every year.

Facts and figures have a way of telling the story clearly and succinctly. They reflect patterns and trends of an industry dedicated to service and confident of its future.

All signposts, as far down the road as we can see, point to a clear straightaway to greater accomplishments in the gas industry.

The British Gas Industry—Before And after Nationalization

Some background on the gas industry in Great Britain leading up to the Gas Act which, in 1948, brought nationalization. It will be noted, among other interesting data, that the nationalized industries of Britain are subject to all the taxes—income, profits, and local—to which private industry is liable.

By LESLIE F. STEMP*

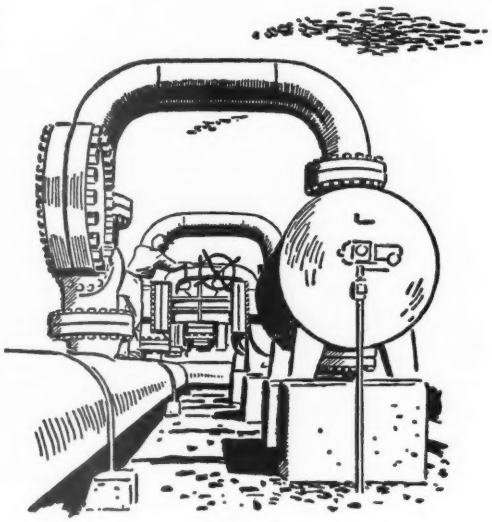
Parliamentary and Governmental Control

THE close relationship which from the earliest days of the industry existed between Parliament and the gas industry arose from the fact that gas undertakers found it necessary to break open streets for the purpose of laying mains and pipes for the distribution of gas. Such powers could only be obtained from Parliament and were normally granted by Private acts.

The procedure for the passage of such acts through Parliament closely resembled that applicable to Public acts except that the committee stage in the case of a Private act afforded an opportunity for the merits of the act or any objections thereto to be argued before the committee by counsel who were normally members of the Parliamentary bar.

The powers in respect of streets were not normally granted unconditionally but

*Legal adviser, the Gas Council, London, England. For additional personal note, see "Pages with the Editors."



were conferred only in consideration of the acceptance by gas undertakers of a number of obligations and restrictions. The more common provisions of this kind were incorporated in 1847 and 1871 in the Gas Works Clauses acts which became applicable to the gas undertakers in whose Private acts (and later Orders) they were incorporated.

The actual supervision of the gas industry was delegated by Parliament to that branch of the Civil Service known as the Board of Trade, until these functions were transferred in 1942 to the then newly appointed Minister of Fuel and Power (since 1957 the Minister of Power). The Minister is in accordance with the British Constitution not only a member of the government but also a member of Parliament and, as such, is answerable in Parliament for the performance of his functions.

Structure of the Gas Industry before Nationalization

Types of Ownership

BEFORE the nationalization of the industry on May 1, 1949, the gas supply industry in the United Kingdom consisted of undertakings owned by (a) local authorities, (b) statutory companies, and (c) nonstatutory companies.

Local authorities for this purpose consisted of county, county borough, or urban district councils, including borough councils. The vast majority of local authority gas undertakings were owned by borough councils.

Statutory gas companies were either (i) incorporated by Special Act or (ii) registered with limited liability, working under statutory powers conferred by Provisional Order (that is an order confirmed by act of Parliament) or Special Order (that is an order made by the Ministry and approved by a resolution of both houses of Parliament).

Nonstatutory gas companies were normally limited liability companies having no statutory powers and possessing no right to break open streets and bridges otherwise than by the consent of the highway authority. In England and Wales they were under obligation to become statutory if, in any year, they had sold more than 30 million cubic feet of gas and they were subject to tests in respect of gas purity and pressure. These obligations did not apply to nonstatutory companies in Scotland, which were liable to compulsory purchase by their local authorities.

DIFFERENT types of ownership predominated in different areas. In London the greater part of the supply was in the hands of companies, some of which were to a certain extent financially associated, whilst a minority were controlled by holding companies. In the mainly industrial areas of the Midlands and the North, local authority ownership predominated, with a proportion of companies, some under the control of holding companies. The south of England was almost wholly supplied by companies, many being subsidiaries of holding companies. In Scotland there were 64 local authority undertakings, which supplied 85 per cent of the gas sold in Scotland, four statutory companies which supplied 2.5 per cent, and 132 nonstatutory companies which supplied 12.5 per cent.

In 1946 there were 1,046 undertakings. (See table, page 543.)

Capital Structure

With the exception of Manchester, all the early gas undertakings were formed as companies, the first in 1810. Since the supply of gas was then regarded as a hazardous venture, Parliament permitted the raising of the original capital on a 10 per cent basis, additional capital normally being authorized at 7½ per cent.

Towards the middle of the nineteenth century, many companies were purchased by local authorities which raised loans for the purpose. Sanction for these loans required that they should be paid off through sinking-fund contributions well within the estimated life of the plant. After an initial high interest period coinciding with the currency of the purchase loan, local authorities had to provide for interest payments well below the value of the assets and, after the repayment of the loan, interest payments ceased.

Company undertakings continued to operate 10 per cent stock as the foundation of their capital structure—although in many cases the bulk of the stock had been converted to a 5 per cent basis—and were not permitted to make any provision for capital redemption. The result was that the capital upon which interest was payable had increased in company undertakings and decreased in local authority undertakings. On an average, local authority undertakings sold 20 therms of gas for every £1 of total outstanding debt, while statutory companies sold 6.5 therms for every £1 of share and loan capital.

At the end of 1945 the total capital embarked in the gas industry was more than £261 million, being over £162 million in statutory company undertakings, nearly £94 million in local authority undertakings, and about £5 million in nonstatutory companies.

Legislative Control of Gas Industry

Extent *of control.* The extent and nature of the legislative control of gas undertakings, which were much more comprehensive than those applied to electricity supply, were illustrated by the fact that—in addition to numerous General acts and many hundreds of Departmental orders—there were in force, up to 1937, no less than 3,278 Private Gas acts and Special orders.

Scope of control. Statutory companies and local authority undertakings were subject to the following, among other, legislative controls:

Area: Defined by act or order.

Lands: Amount of land which might be purchased limited. Land for manufacture of gas and by-products, or for storage, had to be scheduled by act or order.

	Number	*Annual Make of Gas Mill. Cu. Ft.*	*Total Gas Made Percentage of*
Local authorities	275	152,208	36.4
Statutory companies	405	254,293	60.8
Nonstatutory companies	366	11,645	2.8
	1,046	418,146	100%
Coke oven gas purchased		51,968	
Total gas available		470,114	

Gas supply: Undertakings were obliged to give and maintain a supply to certain premises and public lamps.

Gas: Subject to tests for pressure, purity, and calorific value.

Meters: Undertakings had to supply on request a duly stamped meter.

Price: Controlled by a maximum price, or related to dividends, there being maximum price, standard price (sliding-scale), and basic price companies. Consumers had the right to gas at flat rate price per therm and were entitled to equality of treatment as to prices (to be amplified below).

Dividends: Controlled by a maximum dividend, or related to gas prices.

Fittings: Hire charges for meter and appliances installed for prepayment consumers were based upon a maximum charge per therm consumed.

Capital: Amount of share and loan capital prescribed by act or order. Capital had to be raised by public auction or tender.

Investment powers: Amount of capital which might be utilized for the purchase of securities of other undertakings was limited.

Accounts and returns: Such annual accounts and returns as the Minister required had to be furnished.

Residuals: By-products which might be produced and worked up were specified.

PRICE *and dividend control.* The manner in which the dividends and gas prices of statutory gas companies were controlled varied according to whether they were maximum price, standard price (sliding-scale), or basic price companies.

Maximum price companies were the oldest type. Their acts or orders provided for a maximum gas price and maximum dividend, neither of which might be exceeded until another act or order was obtained. A reserve fund was permitted from which the amount by which any previous dividend fell short of the yearly maximum prescribed might be made up.

STANDARD price (sliding-scale) companies operated under provisions first introduced in 1875. The object of the "sliding scale" was to give the consumer a pecuniary interest in the economy and efficiency of the gas company. If the company was able to supply gas at less than the prescribed price (known as the "standard price") it was permitted to pay a proportionately increased dividend above the prescribed rate of dividend (known as the "standard dividend") and vice versa. The "carry forward" of sliding-scale companies was limited and they were normally entitled to create the following funds:

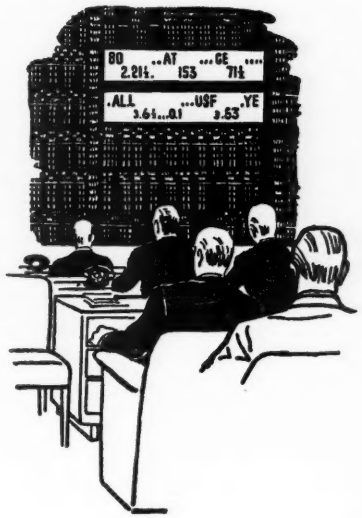
Reserve fund: This was made up of sums which the company might have paid as prescribed dividends. It might be used for the payment of dividend in any year in which the profits were insufficient to pay the authorized dividend.

Renewals fund: This might be used to equalize expenditure on maintenance and renewal of plant and works. The maximum amount of the fund was prescribed.

Special purposes fund: This might be applied to meet expenditure incurred by reason of circumstances which due care and management could not have prevented. The maximum amount of the fund was prescribed.

Dividend Control

"THE manner in which the dividends and gas prices of statutory gas companies were controlled varied according to whether they were maximum price, standard price (sliding-scale), or basic price companies. Maximum price companies were the oldest type. Their acts or orders provided for a maximum gas price and maximum dividend, neither of which might be exceeded until another act or order was obtained. A reserve fund was permitted from which the amount by which any previous dividend fell short of the yearly maximum prescribed might be made up."



BASIC price companies operated under complex provisions first introduced in 1920 and comprised certain of the larger undertakings. The object was to prevent the automatic reduction of dividend when the price of gas was increased by circumstances beyond the control of the company, which was a defect in standard price companies. There was prescribed a basic gas price and a basic dividend which, having regard to the value of money, represented a fair return on the invested capital. A calculation was made yearly of the amount which consumers would have paid if all gas had been supplied at the basic price. The difference between the amount and the total sum charged represented the "consumer's share." If the profits were available, an amount not exceeding one-third of the consumer's share might be applied as to one-half in payment of increased dividend and as to the other half for the benefit of the employees of the company, the balance being used to reduce the price of gas. Basic price companies were permitted similar funds to standard price companies.

The main advantage of the basic price method over the sliding-scale system was that it provided for a minimum dividend (the "basic dividend") and thus afforded greater security to the investor and so enabled the company to raise money on more advantageous terms, which thereby indirectly benefited the consumer. A defect in the method as first introduced was that any gas sold by an undertaking at reduced prices—for example, for industrial purposes or in bulk quantities—and yielding a low profit, attracted the highest dividend, without price advantage to the domestic consumer. After 1931, however, a clause was introduced to remedy this defect.

Governmental Inquiries

BEFORE nationalization the gas industry was the subject of a number of governmental inquiries as follows:

Fuel Research Board, 1917:

In its report the board recommended that the system of charging for the gas should be altered from the volumetric basis to the thermal system, under which the charge was based upon the number of heat units (therms) contained in the gas. The Gas Regulation Act, 1920, gave effect to the report, thus marking the change in function of the gas industry, by accepting the heating instead of the lighting standard as the basis of the charge for gas.

National Fuel and Power Committee (Melchett) 1926:

This committee made recommendations regarding the issue of capital and the revision of standard and maximum gas prices. The Gas Undertakings Act, 1929, was based on this report.

Departmental Committee on Area Gas Supply, 1929:

This committee recommended that the industry should be enabled to adopt more scientific methods of charge, particularly in the form of two-part tariffs.

Gas Legislation Committee (Wrottesley) 1931:

First Interim Report, March, 1932: This report dealt with the powers of investment by one undertaking in another. The Gas Undertakings Act, 1932, was based upon the report, but the act was not fully operated as the amounts which a statutory gas company was authorized to utilize in the acquisition of other undertakings were too limited.

Second Interim Report, December, 1932: This report was against the granting of powers to impose compulsory two-part tariffs, but suggested that such tariffs might be offered voluntarily as an alternative to the flat rate system of charging for gas. Effect was given to this recommendation by the Gas Undertakings Act, 1934. The report recommended that undertakings should have the right to impose a minimum charge for the provision of a gas supply, but this recommendation was never implemented.

Final Report, March, 1933: The final report of the Wrottesley Committee suggested various legislative amendments of a minor character, most of which were incorporated in the above-mentioned Gas Undertakings Act, 1934.

Joint Committee of Both Houses of Parliament on Gas Charges, 1937:

This committee reported in favor of the right to impose a minimum charge which, as stated above, was never implemented.

Sankey Committee on Holding Companies, 1939:

The object of this committee was to examine the rapidly growing tendency towards integration, to which reference is made below. The committee was adjourned without reporting as the result of the outbreak of war in 1939.

Committee of Inquiry into the Gas Industry (Heyworth) 1944:

This committee was appointed in June,

1944, by the Minister of Fuel and Power and reported in December, 1945. It found "that within the limits of the existing structure the industry today is reasonably efficient" but "that the existing structure is restrictive of further progress." This necessitated "a basic change in the structure of the industry" as "the only approach that can produce really effective results quickly." The "direction of the required change" was clearly "towards grouping into large units" which was "in no sense a revolutionary idea" being "entirely consistent with past history, which shows a steadily increasing trend towards integration."

The committee report recommended the "compulsory purchase of all existing undertakings" by ten autonomous regional boards, the capital issued by each being "guaranteed by government for a commission of one-fourth per cent." The boards would be responsible for the "efficient operation of the industry" which should be enabled "to compete effectively and without restriction with other fuel industries."

Geographical Integration

THE gas industry had grown up on a local basis and still retained much evidence of that origin. Nevertheless, below a certain size it was more difficult, if not impossible, for an undertaking to employ specialist personnel, to take advantage of modern developments, or to raise capital on the most favorable terms, unless it was associated with other undertakings.

THE Private Act or Special Order procedure necessary to the voluntary merger of gas undertakings was cumbrous, tardy, expensive, and uncertain, while the war retarded integration, since this could not be proceeded with if not directly in the interests of the prosecution of the war. Nevertheless, between the wars much progress was made in reducing the number of undertakings, the various methods of geographical integration practiced on a voluntary and evolutionary basis being as follows:

> Amalgamation or merger of geographically contiguous undertakings, generally by the absorption by a larger undertaking of smaller neighboring units, which was facilitated by the Gas Regulation Act, 1920.
>
> Association of gas undertakings (i) under the aegis of a holding company, which assumed control by the acquisition of a majority holding of voting capital in companies, or in a few cases, by the outright purchase of local authority undertakings; or (ii) by a

¶ "THE *gas industry was the third of the fuel industries of the United Kingdom to pass into national ownership, and the form of nationalization imposed upon the industry differed from those applied to the coal industry by the Coal Industry Nationalization Act, 1946, and to the electricity industry by the Electricity Act, 1947. Each act marked a development in the method of public control, the effect of which was an increasing devolution of power from the center.*"

statutory company investing in the shares of other undertakings, which was made possible by the Gas Undertakings Act, 1932.

Joint gas authorities, being the amalgamation in suitable areas of local authority and/or company undertakings which retained direct control by representation.

Transmission companies designed to provide for the large-scale manufacture and/or supply of gas in bulk to undertakings over wide areas, where justified by high concentrations of population.

Joint working arrangements between undertakings to increase efficiency and economy in the manufacture and supply of gas.

Of these various methods of integration, most had been accomplished by (a) amalgamations or mergers and (b) association. During the years 1931 to 1938 alone, 125 undertakings were amalgamated or merged and 21 between 1939 and 1944.

Association under the aegis of holding companies had, by the end of 1937, brought under control 310 undertakings—making 9.5 per cent of the total gas sold by all undertakings—mostly by the six largest holding companies. There were five joint gas authorities and one transmission company, which operated under statutory powers. Joint working arrangements between undertakings had resulted in, *inter alia,* bulk supplies being given by some 60 and received by 74 undertakings.

In a sense, the movement towards integration was consummated by the nationalization of the industry in 1949.

The Nationalization of the Gas Industry By the Gas Act, 1948

The Gas Act, 1948, received the Royal Assent on July 30, 1948. On May 1, 1949—the day appointed by the Minister of Fuel and Power as the vesting date—the gas industry passed into national ownership and 1,037 undertakings vested in the gas boards of the twelve areas into which Great Britain is divided.

Undertakings Wholly Vesting

The undertakings of companies, whether statutory or nonstatutory, the primary function of which was the supply of gas to the public, vested together with all the rights, property, liabilities, and obligations of those companies in the appropriate area gas board. Similary, the assets and liabilities of gas holding companies, in which the value of the securities held by such companies in gas subsidiaries amounted to not less than 75 per cent of their total assets, were transferred to the appropriate area board. These companies were dissolved on May 1, 1949, by the Gas Act without further legal process.

Compensation for the Transfer

Compensation was payable to holders of securities in gas undertakings which were taken over by an area board or the Gas Council and which were dissolved at vesting date. The compensation took the form of an issue by the Gas Council of British gas stock of a value estimated by the Treasury to be of such amount as was at the vesting date of a value equal to the value of the securities held, regard being had (in estimating the value of the stock so issued) for the market value of government securities at or about the vest-

Duty of the Gas Council

"It is the duty of the Gas Council to promote and assist the efficient exercise and performance by the area boards of their functions and to advise the Minister [of Power] on all questions affecting the gas industry and matters relating thereto. In addition, the Gas Council has special duties in connection with such matters as research, the education and training of staff, and the establishment and maintenance of machinery for the negotiation of wages and conditions of service."

ing date. The stock was a 3 per cent guaranteed stock, issued at par and redeemable at par in 1990-95.

THE values of securities for the purposes of compensation were to be determined in accordance with § 25 of the act which provided for values to be arrived at in the manner outlined below:

Quoted Securities

These are securities which were quoted in the London Stock Exchange Official Daily List on certain specified dates in October, 1947, and also were quoted in that list or in the Stock Exchange Daily Supplementary List on any of certain dates in February, March, April, May, June, and July of 1945. The value of each was to be the average of its mean quotations on the prescribed dates in October, 1947, or in 1945, whichever was the higher.

Unquoted Securities

The value of these securities was to be determined by agreement between the stockholders' representative and the Minister of Fuel and Power or, failing agreement, by arbitration.

Stockholders' representatives could apply to the Minister for an increase in the value of quoted securities, other than debentures, debenture stock, and mortgages, if

(a) the sales of gas in the year 1943, 1944, or 1945 were substantially

lower than in 1938 through war damage or any transfer of the population from any part of the area supplied by the company caused by circumstances arising out of the war, and

(b) the quotations were lower than they would otherwise have been.

Undertakings Partly Vesting

THE provisions described above refer in the main to companies whose function was wholly or mainly to supply gas to the public.

As indicated above, bodies such as local authorities were also gas undertakers, although the supply of gas was not their sole or primary function. Similarly, there also existed a number of so-called composite companies which supplied water as well as gas. In these cases, nationalization did not affect the existence of the undertakers but merely transferred those assets and liabilities which related wholly or mainly to the gas undertaking of the undertakers.

The ascertainment of the assets and liabilities which vested as being wholly or mainly relating to the gas undertaking frequently presented some difficulty and, failing agreement between the parties, could be resolved by the Ministry having the control of local authorities, or in the case of the composite company, by arbitration.

It would possibly be of interest to deal with these types of organization separately:

Local Authority Gas Undertakings

NO stock was issuable for the acquisition of gas undertakings from local authorities and compensation for the loss of their gas undertakings took two forms. First, the area boards to whom the property and rights of local authorities were transferred became liable to pay the amounts required periodically to satisfy the interest and redemption or repayment charges on the outstanding amounts of loans raised or internal advances made for the purpose of financial undertakings. The obligation continues until the loans are finally discharged.

Where local authorities had purchased gas undertakings by the issue of annuities to the stockholders of previous owners, the obligations of the authorities to the annuitants passed to the area board in the same way as the authorities' obligations on the gas loans. Secondly, additional compensation amounting to £2.5 million was payable by the area boards to local authorities under § 29 of the act for the severance of their gas undertakings from their other activities.

Composite Companies

OF the seventeen composite companies which owned and operated water undertakings in addition to gas undertakings, seven served notice on the Minister under § 18 of the act, the effect of which was that on the vesting date the whole of their property, rights, liabilities, and obligations vested in the prescribed area board, and the holders of the securities of these companies were compensated by the issue of British gas stock. The remaining ten companies served no such notice and the assets and liabilities relating to the gas undertakings only passed to the area boards.

In these cases the securities of each company as a whole were to be valued on the principles laid down for the valuation

of the securities of other bodies and the values so ascertained were to be allocated in the proportion that the average net revenue of the gas undertaking bore to the average net revenue of the company in respect of the last three complete financial years before January 1, 1948. Additional compensation was also payable to a composite company for severance at the rate of £3. 10s. 0d. for each thousand therms sold by the company in 1947.

Holding Companies

THE securities of holding companies were valued on the Stock Exchange basis applicable to statutory undertakers, and the assets and liabilities of the holding company were transferred to the appropriate area board. These assets and liabilities included those of the subsidiary companies which passed without further compensation although the value of the subsidiaries was, of course, reflected in the value of the securities of the holding company.

Valuation of Securities

THE total number of classes of securities which were to be valued, including those of composite companies, was 2,006, comprising 671 debentures, 444 preference shares, and 891 ordinary shares, representing in all 265,000 holders. By vesting date 179 classes of securities had been valued and were extinguished on that day, and the holders were compensated by the issue of British gas stock. The remaining 1,765 securities (*i.e.*, excluding those of composite companies) continued to exist and to be transferable until the conversion date for the security, when the holders became instead holders of the respective amounts of British gas stock attributable to those securities.

The Nationalized Gas Industry

THE gas industry was the third of the fuel industries of the United Kingdom to pass into national ownership, and the form of nationalization imposed upon the industry differed from those applied to the coal industry by the Coal Industry Nationalization Act, 1946, and to the electricity industry by the Electricity Act, 1947. Each act marked a development in the method of public control, the effect of which was an increasing devolution of power from the center. In the case of the coal industry, the Nationalization Act made little, if any, provision for local organization, while the electricity boards were mainly distribution agents for elec-

¶ "NONSTATUTORY *gas companies were normally limited liability companies having no statutory powers and possessing no right to break open streets and bridges otherwise than by the consent of the highway authority. In England and Wales they were under obligation to become statutory if, in any year, they had sold more than 30 million cubic feet of gas and they were subject to tests in respect of gas purity and pressure. These obligations did not apply to nonstatutory companies in Scotland, which were liable to compulsory purchase by their local authorities.*"

tricity generated by the Central Electricity Authority, whose control over the boards was in most matters absolute.

The policy of decentralization was extended when the iron and steel industry was for a time nationalized, and will be applied to the electricity industry when the electricity bill at present before Parliament becomes operative.

In the case of the iron and steel industry the existing companies retained their existence under the control of the public corporation established by the Nationalization Act.

In the gas industry the emphasis is upon the twelve area boards in which the former gas undertakings vested. They are severally responsible to the Minister for the conduct of their business and are, therefore, given the powers necessary for that purpose.

At the same time Parliament saw the need for a central body to represent the industry as a national whole, to assist area boards, and to be responsible for matters which could not be confined to any one area. This central body is the Gas Council. The council is composed of fourteen members; *i.e.*, a chairman, a deputy chairman, and the chairmen of the twelve area boards. The appointments are made by the Minister of Power, who likewise, appoints the members of the area boards.

It is the duty of the Gas Council to promote and assist the efficient exercise and performance by the area boards of their functions and to advise the Minister on all questions affecting the gas industry and matters relating thereto. In addition, the Gas Council has special duties in connection with such matters as research, the education and training of staff, and the establishment and maintenance of machinery for the negotiation of wages and conditions of service.

Further, each area board must submit to the Gas Council estimates of sums which they will require to borrow by the issue of British gas stock for the creation, issue, and management of which the Gas Council is solely responsible, and the Gas Council is not to proceed in the raising of stock unless it is satisfied that the reorganization and development for which the moneys will be required are in accordance with the general program settled by the boards with the approval of the Minister.

The principal of and interest on any British gas stock issued to satisfy compensation are guaranteed by the Treasury, which may also guarantee the interest on and the redemption of any other British gas stock, or any temporary loan raised by the Gas Council or any area board. The Treasury must lay before each House of Parliament a statement of any guaranty given or sums paid thereunder.

The Gas Council is required to prepare a scheme, to be settled with the Minister and the area boards, for allocating to the boards responsibility in respect of British gas stock issued for the purpose of satisfying rights to compensation.

The scheme is to have regard to the extent to which the assets ultimately vested in the respective boards. Similar procedure for allocating responsibility is followed for each subsequent issue of stock and for advances from the Ministry.

The table on page 553 shows the issues of British gas stock made since vesting date. In addition, during the year 1956-57 advances from the Ministry of Power totaled £24 million.

	£ Mill.
(a) Issued in respect of compensation under §§ 25 and 30 of the 1948 act, 3 per cent 1990-95	189
(b) Issued for purposes authorized by § 42 of the 1948 act, on	
May 5, 1949, 3 per cent 1990-95	40
July 12, 1951, 3½ per cent 1969-71	75
August 7, 1953, 4 per cent 1969-72	80
July 14, 1955, 4 per cent 1969-72	100
	484

THE Gas Council must maintain a Central Guarantee Fund for the purposes only (a) of meeting obligations in respect of interest on, or the redemption or repayment of, any British gas stock or any temporary loan, or any compensation payment due to a local authority which the council or any area board is unable temporarily to discharge; and (b) of repaying to the Treasury any payments made by them for the purposes of fulfilling any guaranty given by them.

Since the Finance Act, 1956, the Ministry of Power may advance to the industry any sum which the Gas Council had power to borrow by the issue of British gas stock. These advances are repayable over a period of years which for the gas industry has been agreed as twenty-five years.

The areas of the area boards are prescribed by the Minister and within those areas each area board has the general duty of developing and maintaining an efficient, co-ordinated, and economical system of gas supply, the development of the efficient production of coke and of the recovery of by-products. For the purpose of discharging these duties, each area board is empowered (a) to manufacture and distribute gas, and (b) to manufacture, supply, and sell coke and by-products obtained in the process of manufacturing gas, coke, or any other solid fuels. In addition to these powers, an area board is entitled to sell gas and coke fittings and, after consultation with the Gas Council, to manufacture any plant required by the board or by any other area board, and to manufacture gas and coke fittings except for export. An area board is not, however, entitled to manufacture plant or fittings unless they are satisfied that the available facilities for obtaining such plant and fittings at reasonable prices are inadequate.

The Gas Council is also entitled to manufacture plant and fittings and is

not subject to such a limitation. In actual practice, neither the Gas Council nor the area boards manufacture plant or fittings.

Both the Gas Council and the area boards are bodies corporate with perpetual succession and a Common Seal and have power to hold land without license in mortmain. They are "creatures of statute" and must therefore confine their activities to those functions which they are authorized to perform by the Gas Act, although it is provided by that act that they shall have power to do anything which in their opinion is calculated to facilitate the exercise or performance of any of their statutory functions or is incidental or conducive thereto.

It may be useful to conclude this discussion with some account of the functions of the Minister of Power in respect of the nationalized gas industry and the rights and obligations of gas consumers.

Functions of the Ministry of Power

THE Minister of Power is generally responsible for the fuel industries and it would be his duty to answer in Parliament any questions relating to those industries in connection with any matter for which he is responsible. Responsibility for the day-to-day working of the industry is upon the Gas Council and the area boards, and the Minister does not normally answer questions in Parliament in respect of such matters.

The power of the Minister over the industry is exercised by (i) his right to give directions and (ii) powers of delegated legislation conferred upon him by Parliament.

(i) With regard to directions, the Minister is entitled under the Gas Act, after consultation with the Gas Council, and, where a particular board is concerned, with that board, to give to area boards generally or to a particular area board, or to the Gas Council, such directions of a general character with regard to the exercise and performance of their functions as appear to him to be requisite in the national interest. No such directions have in fact been given to the Gas Council or area boards otherwise than as to the form of their accounts. In addition, the Minister may give directions as to the form of the annual reports to be made by the area boards and the Gas Council and must lay a copy of these reports before each house of Parliament together with a report upon the exercise during the year of his functions under the Gas Act, 1948.

The Minister's approval is required for programs of reorganization and development and he is also to be consulted by the Gas Council with regard to general programs for research and training of employees. The Minister is the sole authority for testing meters and gas supplies, and the examiners of gas and gas meters are appointed and employed by him.

(ii) Parliament has by the Gas Act conferred upon the Minister powers of delegated legislation exercisable by the making of orders and regulations. A large number of such orders have been made by the Minister since nationalization and these range over almost every matter with which the industry is concerned. In granting delegated powers Parliament has endeavored to retain in itself the ultimate control.

THE measure of that control depends upon the type of order which the Minister is empowered to make in respect of any particular matter. Three types of

order are referred to in the Gas Act. The more usual type of order is said to be subject to a resolution of annulment. This implies that the order must be laid upon the table of both houses of Parliament for forty days, and will come into operation unless during that time either house passes a resolution to annul the order.

The second type of order which is applicable to matters of somewhat greater importance requires an affirmative resolution and therefore does not come into operation until a resolution approving the order has been moved in both houses of Parliament.

The third order is said to be subject to special parliamentary procedure and is applicable where the Minister desires to exercise such important functions as the repeal or amendment of local enactments applicable to the gas industry. Where special parliamentary procedure is applicable, the order before coming into operation must be considered by a joint committee of both houses of Parliament.

THE procedure outlined above with regard to orders was enacted by the Statutory Instruments Act, 1946, and the Statutory Orders (Special Procedure) Act, 1945. These acts were passed at a time when Parliament was seriously concerned with regard to the extent to which legislative powers had been granted to subordinate bodies, an alarm which was increased by the attention which was directed to the matter by the late Lord Chief Justice of England, Lord Hewitt.

The two acts to which reference has been made above represent an attempt by Parliament to control the powers which it had delegated to subordinate bodies.

Consumers

As before nationalization, all owners and occupiers of premises within 25 yards of gas mains are entitled, subject to certain conditions, to demand a supply of gas. An area board would not, however, be under an obligation to give a supply for industrial purposes of such an amount which would involve an enlargement of the distribution system unless the consumer was prepared to enter into some agreement with regard to the capital cost involved.

Likewise, where the supply is required merely for stand-by purposes, the area board could impose upon the consumer a minimum charge.

While these rights have survived from the prenationalization legislation, the nationalized industry has ceased to be fettered with many of the restrictions im-

Year 1	*Disposable Surplus* 2 £000's	*Reserve Funds* 3 £000's	*Placed to Replacement and Obsolescence Reserves* 4 £000's
1949/50	3	370	—
1950/51	1,938	665	625
1951/52	1,463	365	675
1952/53	2,680	875	825
1953/54	2,447	1,045	375
1954/55	2,434	975	453
1955/56	2,327	1,325	975
Total	13,292	5,620	3,928

posed upon former gas undertakings in respect of price. Obviously, such restrictions as were imposed upon sliding-scale and basic price companies could have no application to area boards which are not capable of paying any dividend. Further, no maximum price is imposed, the area board being free, subject to what is said below, to fix the price of gas in accordance with ordinary commercial considerations. Such prices must be published in the form of a gas tariff prominently displayed and this tariff must indicate the methods and principles upon which the prices have been fixed.

THE structure of tariffs invariably presents problems of difficulty and importance. A variety of tariffs was inherited by the boards from the former undertakers and one of the earliest tasks on nationalization was to remove glaring anomalies in price and to remedy the position created where former undertakers had been running at a loss.

Such a step was a necessary preliminary to the introduction of tariffs uniform in structure, as distinct from price, based on the general principle that prices must reflect the cost of supply. The integration of a large number of former undertakers in one area board made it possible to extend the area throughout which one uniform price was applicable.

Whereas before nationalization there were over a thousand separate undertakings many of which had several price zones, it has now been found possible to reduce the number of price zones of boards to less than one hundred.

The application of the principle that, broadly, prices should reflect the cost of supply involves differentiation between consumers. A popular method of differentiating is according to volume of consumption by means of a block tariff, by which successive blocks of consumption are charged at progressively lower prices. This form of tariff is used to some extent by all boards; seven boards have one block tariff for all purposes, while the other five use it only for industrial and commercial consumers, domestic consumers having the option of a flat rate or a two-part tariff. There is no uniformity in the construction of the block tariffs, the number of blocks in a tariff ranging from three to 10, while the size of the first block varies from 10 therms to 65 therms in all-purpose tariffs (larger where domestic consumers are excluded). One board charges the same price to prepayment consumers as to credit consumers; most other boards increase the price to prepayment consumers by adding a supplement of ld. or 2d. per therm on the first block of the tariff. One board has abolished meter rents, but the practice varies in other boards. Some boards have a minimum charge per quarter. Only one board offers a discount to induce prompt payment of accounts.

IN special cases area boards may make agreements outside the tariffs but neither such agreements nor the tariffs must show undue preference to any person or class of persons, nor exercise any undue discrimination against any person or class of persons.

The area boards are also by reason of the Gas Act directed to secure that their revenues are not less than sufficient to meet their outgoings properly chargeable to revenue account, taking one year with another. The meaning of the term "taking

one year with another" is not capable of generalization but the term obviously indicates that within a measured term of years the area board must sail on an even keel.

The industry has secured a small overall surplus in each of the years subsequent to nationalization, as indicated in the table on page 555.

It was, however, appreciated that it was necessary to establish some machinery to deal with the interests of consumers in substitution for the close control over prices and dividend formerly exercised by the Minister. For this purpose the Consumers Consultative councils were established. Such councils have been appointed for each of the twelve areas and consist of individuals appointed by the Minister. Some are appointed from panels of persons nominated from among members of local authorities and the remainder consist of persons who, in the opinion of the Minister, represent commerce, industry, labor, and the general interests of consumers of gas.

The function of these councils is to consider any matter affecting the supply of gas in the area, including tariffs and the provision of new and improved services, and of considering and reporting to the area board on any matter which may be referred to them by that board. A Consultative Council is entitled to make representations to the Minister, and if as a result of those representations the Minister is satisfied that there is a defect in the area board's general plans and arrangements, he may give directions to that area board, although at the present time no such directions have, in fact, been given.

The Gas Act confers on area boards powers to open and break up streets and bridges for the purpose of laying mains and pipes for the supply of gas.

Subsequent to nationalization, the procedure under which bodies, which included electricity boards, Post Office, sewer authorities, might open streets was standardized throughout the country by the Public Utilities Street Works Act, 1950, which contains provisions adjusting the relationship of those bodies with the various highway authorities of the country.

In particular, this act regulates the cost of removing mains and pipes in cases where such removal is rendered reasonably necessary by highway improvements. For instance, a road-widening scheme might well reduce the cover necessary to protect subsurface works or have the effect of altering the relative position of the mains from a position under the footway to one under the carriageway. It is generally agreed that the removal of subsurface works in such cases to a satisfactory position and depth is rightly to be regarded as part of the highway improvement and should be included in the cost of that improvement.

Conclusion

Although it may well be that the possibility of the transfer of the American gas industry to public ownership is remote, it is thought that the brief account of the experience of the British gas industry before, during, and after nationalization might not be without interest to members of the gas industry in America and to their legal advisers.

It will doubtless be appreciated that the nationalization of the industry was the culmination of tendencies which owed

their origin to the early days of the industry. From the earlier days of the industry there had been some public control exercised primarily through Parliament and to an extent delegated by Parliament to the appropriate Ministry. The tendency had been for this control to increase and to extend to most of the activities of gas undertakings. In many respects this control had a restrictive influence, and the number of inquiries set up by various governments to investigate the affairs of the industry is evidence of some dissatisfaction with existing conditions.

On nationalization, the theoretical powers of the government over the industry were increased. Members of boards were appointed by the Minister who was empowered to give directions as to a wide range of matters. These powers have, however, been reasonably and sparingly exercised, and in practice there are many matters, such, for instance, as tariffs, where the gas boards today possess less restricted powers than those possessed by former undertakers.

The idea of nationalization is also subject to the evolutionary process. It may be said to have arisen with the direct transfer of an industry to the state as in the case of the Post Office. The next stage is seen in the transfer of an industry to one central corporation, such as the National Coal Board, without statutory provision for local administration.

A further advance is illustrated by the Electricity Act, 1947, which, although providing for the establishment of local boards, retains an overriding power in the hands of the central organization.

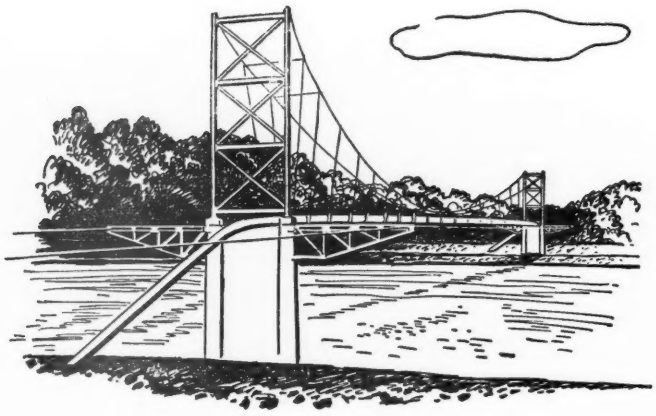
In the gas industry it is frequently stated that the area boards are "autonomous," the Gas Council's functions being mainly financial and advisory. Such a setup is now to be applied to the electricity industry.

The last experiment, which related to iron and steel, retained the existing companies, transferring only control to the central body.

From the legal standpoint the effect of nationalization has been the codification of the law in the one Gas Act which applies to all area boards throughout the country. Before 1948 each gas undertaking was governed not only by several Public acts but by a large number of Private acts and Orders, each of which required investigation before a legal opinion on any matter concerning a gas undertaking could be expressed.

The virtual disappearance of this private legislation and the substitution of the Gas Act as a code for the industry has resulted in a simplification. It has, however, failed to overcome the difficulty of interpretation not only of the act itself but of the large number of orders which have been made thereunder. Many questions of importance can only be satisfactorily determined by reference to the courts for judicial construction.

It may well be considered that the increasing prosperity of the industry in spite of the radical changes through which it has passed since the Second World War is evidence of service which it renders to the community and to the tact and ability of those responsible for its maintenance.



The Consumer Benefits of Natural Gas for Electric Generation

The natural gas industry has grown and prospered through interfuel competition. Within the framework of regulation it has endeavored to maintain the vigor and activity which have characterized it from early years.

By LARRY SHOMAKER*
VICE PRESIDENT, NORTHERN NATURAL GAS COMPANY

Natural gas is a fuel of many uses. Its flexibility and unusually desirable characteristics lend themselves readily to almost any use for which energy may be required. Indeed, in recent years natural gas has even extended its market from the traditional one of an energy source to a source of raw material. Of the many uses—from home, to store, to factory—only one has seemed to conjure up opposition and objection—the use of natural gas as fuel to fire boilers in electric-generating stations. The natural gas industry has still considerable ground to cover to obtain a much needed understanding of how materially the consumer benefits from the sale of gas on an interruptible basis to electric-generating plants.

The Black Dog case[1] in which Northern Natural Gas Company was involved for a period of two years represents a culmination of the efforts made by representatives of the coal interests to prevent a pipeline company from adding an interruptible generation station load. It is probable that in no other similar case were the economic factors and public benefits so fully explored. It is in the light

*For additional personal note, see "Pages with the Editors."

[1] Re Northern Nat. Gas Co. (FPC 1955) Docket No. G-2409.

of this background that the discussion of the benefits to the consumers from the viewpoint of the pipeline company is deemed to be of major interest to all segments of the industry, since all segments, including the consumer, are directly and substantially affected by the existence of such loads.

The Historical Growth of Natural Gas as A Generating Station Fuel

THE increasing importance of natural gas in meeting the ever-growing fuel requirements of the nation has been greatly facilitated by the active co-operation of all segments of the natural gas industry. Since the end of World War II, the total consumption of natural gas has more than doubled. At the same time, the annual consumption of energy fuels and energy from water has risen by only one-third. In 1946, natural gas accounted for only 14.7 per cent of the total energy consumed; in 1956, it accounted for 23.9 per cent. The Federal Power Commission has certainly played an active rôle in encouraging and furthering this rapid development into an orderly pattern in its regulation of the interstate natural gas transmission systems.

The price advantage of natural gas over other fuels, chiefly coal and oil, coupled with technical advancements in the field of long-distance gas transmission, made the use of natural gas economically feasible in previously unserved areas. The construction of transmission systems by new natural gas companies and the expansion by older companies brought large volumes of natural gas into new and expanded markets. The pipelines were expanded primarily to serve the domestic space-heating, cooking, and water-heating markets. The nature of such loads, with a relatively large peak during the heating season, made large volumes of gas available for industrial use during off-peak periods at prices competitive with other fuels. The quantities of gas utilized for space heating and cooking have more than tripled during the ten-year period 1947 through 1956. Total industrial consumption was more than doubled.

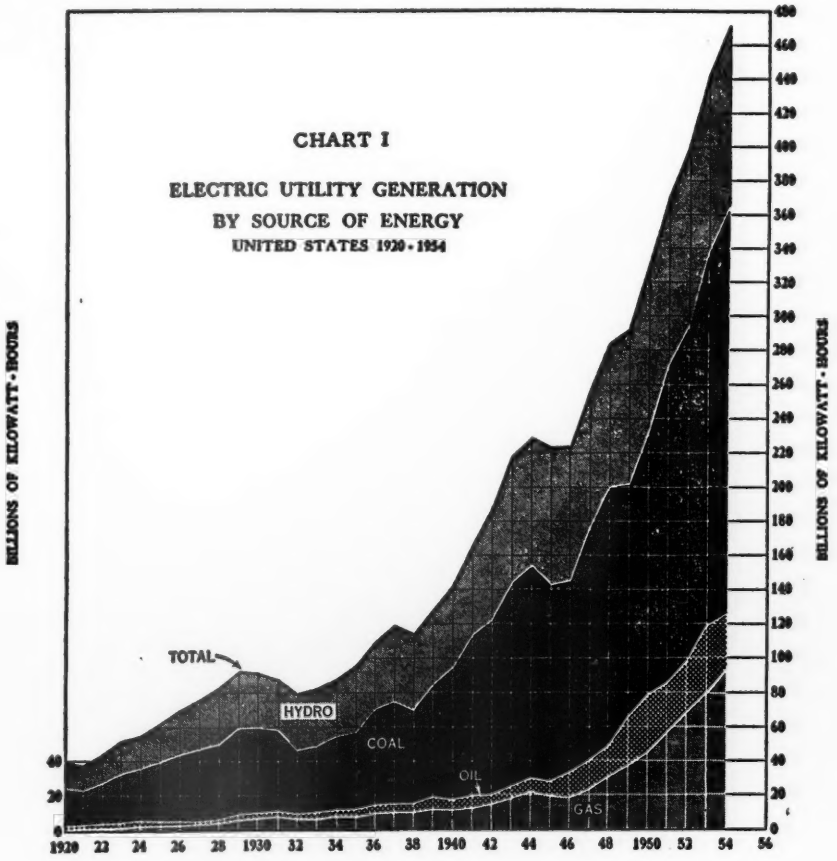
THE construction of large-diameter, high-pressure pipelines is characterized by extremely large investments, with the resulting cost of transporting gas consisting primarily of fixed or investment costs. As a result of this characteristic, each consumer group has benefited directly by natural gas service, and each group's consumption has indirectly benefited the other consumers by contributing to the economies of large volume transmission and distribution.

For many years prior to World War II, the long-distance pipeline companies and the distributors were at a tremendous price disadvantage in seeking the off-peak industrial market. It was not until after the war when a favorable price relationship between gas and other fuels came into existence that natural gas companies were able to make marked inroads into the nation's industrial market.

Electric-generating station loads served by natural gas reflect this historical development. Pipelines are built to serve the maximum-day requirements of the firm load which is largely domestic. Most of the domestic load is space heating. The domestic house-heating customer requires the use of all of the installed maximum daily capacity only a few days out of each year.

Therefore, in order to develop a more efficient and economic use of the pipeline capacity, it is necessary to add additional off-peak load that can be interrupted during winter months. This increases the load factor of the pipeline by moving large volumes at times when the pipeline would otherwise be only partially loaded. The lower unit costs arising from this improved utilization of facilities will benefit the domestic customers. Generating stations provide this type of load. Since generating stations were located in the same market area as the domestic natural gas loads, service to generating stations could be effected with little or no added investment by the pipeline.

Furthermore, generating station loads are particularly suited to rapid and substantial curtailment or interruption, such characteristics being complementary to the domestic load and thus resulting in obvious operational advantages. These factors, together with the substantial contribution such loads could make to the fixed costs of the system, provided bene-



Source, Federal Power Commission.

fits to *all* consumers served from the pipeline.

THE magnitude of the growth of natural gas as a fuel source in generating electricity is shown by Chart I, page 561, taken from statistics issued by the Federal Power Commission.

Naturally, gas as an energy source for electric generation competes with other fuels.[2] To the extent that the gas industry could be prevented from attaching the generating station loads, then the coal industry could obtain additional business in areas where coal competes with natural gas. It will be noted from Chart I the favorable position enjoyed by the coal industry during the past three decades in supplying the energy for electrical generation. The chart indicates that beginning in 1946 slight inroads were made by the gas industry competing for this type of business. The coal people have actively resisted this gas competition and for several years have taken action by intervening in opposition to gas transmission companies seeking FPC authority to add large volume interruptible load.

It is in the light of the above-described background that the Black Dog case is set forth.

The Black Dog Case

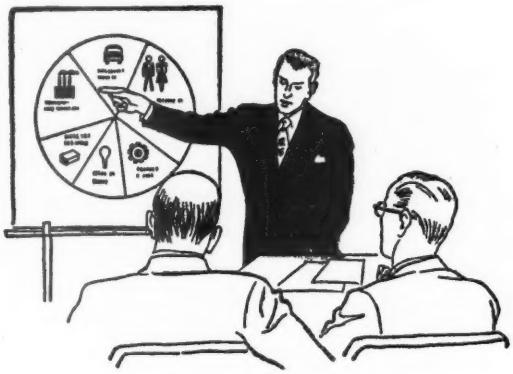
NORTHERN NATURAL GAS COMPANY has been delivering large volumes of gas to several generating stations of Northern States Power Company for many years. Northern Natural has for a long time been familiar with the electrical generation growth of the Northern States Power Company. On March 26, 1954, Northern Natural executed a gas sales contract with Northern States for the sale and delivery of interruptible gas to the Black Dog power plant located adjacent to the Twin Cities of Minneapolis and St. Paul. Subsequently, on April 19, 1954, Northern Natural Gas Company filed an application with the Federal Power Commission for a certificate of public convenience and necessity to serve gas to the new power plant.

This proposed sale by Northern involved industrial off-peak gas of approximately 14 million Mcf per year. The proposed sale was to be made directly by Northern to the consumer rather than to a distributor for resale to the consumer. The facilities to be constructed for the service were minimal, consisting of a little more than one mile of pipeline at an estimated cost of $137,000.

THE examiner's decision, filed on August 15, 1955, recommended that the application for the certificate be denied. The reasons are set forth in the following quotations taken from that decision:

> Because applicant can use its present gas supply to meet the requirements of the general public, it should not be permitted to dissipate that supply through any inferior use such as boiler fuel.
>
> . . . Moreover, other considerations outweigh the alleged saving to Northern States, including the need for conservation; the substantially higher prices to be paid for replacement gas, which higher prices would be rolled in with rates paid by applicant's utility customers; the fact that the sale would

[2] In some parts of the United States gas is the primary energy source and is sold on a firm basis for electric generation. The country-wide statistics represented by Chart I on page 561 include such sales. The analysis in this monograph is not intended to refer to such sales, but primarily to off-peak sales by long-distance pipeline companies.



Fuel Competition and Natural Gas

"THE natural gas industry has developed by competing with other fuels as actively as possible. Within our framework as a regulated public utility we have endeavored to maximize our income and grow as rapidly as economically feasible to meet the demands of the consuming public. If in the process of meeting these demands for natural gas we have been successful in competing with other fuels in various markets, that is no reason to limit our ability to effectively compete."

be below commodity cost; and the fact that the displacement of coal by gas would result in a substantial loss in revenue to the coal and related interests.

After argument on exceptions to the examiner's decision, the commission by order issued March 16, 1956, upheld the examiner's decision that a certificate should be denied. While there was considerable discussion on the subject of conservation, the majority of the commission denied the certificate on the cost grounds that the revenues which would be derived from the proposed sale were not adequate to recover the costs which would properly be allocable thereto. The two commissioners who dissented from the order and one commissioner who concurred with the majority opinion did not consider gas supply an issue in this particular proceeding. The implications left in some of the statements made in the decision, particularly in the concurring opinion, were far-reaching enough to allude to a policy of federal end-use control of natural gas.

NORTHERN filed an application for rehearing re-emphasizing the benefits to all consumers on Northern's system. On June 30, 1956, the commission reversed its initial decision and granted to Northern a certificate to make the Black Dog sale. The commission stated, "Northern's application for rehearing pointed out several

matters which deserved further consideration."

Limited Nature of Pipeline Sales to Generating Stations

BEFORE discussing the merits of pipeline service to generating stations, it is desirable to emphasize the limited nature of the sales pipeline companies make to generating stations. Speaking on behalf of Northern Natural Gas Company, and probably the industry as a whole, what is desired is a market for off-peak gas—the sale of gas to fill the unused portion of the pipeline capacity during the off-heating season. This will permit a more effective and efficient use of the pipeline—the economics of which will accrue to the benefit of the ultimate consumer. *We do not want to serve the full year-round fuel requirements of generating stations. We do not build capacity to serve generating stations; instead we want to use the designed capacity, which is constructed primarily to serve domestic loads during winter periods.*

It is true that in accordance with the above-described limited objectives the natural gas industry has served increasing amounts of the electric-generating station fuel requirements, as illustrated on the chart previously set forth on page 561. The increase in natural gas use as a generating station fuel has accompanied a substantial increase in the requirements of electric-generating fuel. The competing coal has also increased in use as generating station fuel; in fact, even more so than gas. The table (page 565) for the seven years of 1949 through 1955 shows that the coal industry continues to receive the lion's share of the electric generation market.

Boiler Fuel Sales Benefit the Public

To those of us in the pipeline business, it seems so obvious that boiler fuel sales to generating stations provide substantial benefits to the public that explanations appear unnecessary. Yet, the existence of the benefits which are large and tangible have been obscured in the smoke of obfuscating argument. It is desirable to re-establish a proper sense of perspective by again setting forth the benefits, and when we speak of benefits to the public we mean all segments of the industry, to the producers, the pipeline companies, the distributing companies, and the ultimate consumers themselves.

The problem confronting the pipeline company in this regard arises because of the nature of the loads served. The tremendous expansion programs of natural gas companies since the end of World War II have been designed for the primary benefit of the domestic customer. Since 1949, customers using gas for house heating have increased by more than one million a year. It is estimated that the larger part of the growth of the gas business in the future will continue to be for residential heating rather than any other form of usage. Thus, the primary beneficiary of the pipeline capacity expansion has been and will be the domestic consumer.

THE domestic load is characterized by a tremendous wintertime peak. As a result, the domestic consumer utilizes the pipeline on the average only about one-third of the time. This presents serious problems from the viewpoint of obtaining supplies of gas and of costs. Pipeline operators and distributors have stepped up the search for underground storage areas

and for other methods of meeting the peaks of the heating loads. But in the absence of such alternate methods of meeting peaks, the flow of gas through the pipeline must be increased well above the one-third usage of the domestic customer if costs of hauling the gas through the pipeline are to be kept at economic levels. This is a common problem of any transportation system, whether it hauls coal, bricks, wheat, or any commodity—the problem of fully utilizing the facilities at all times. As an example, freight rates would be cheaper on all commodities if the railroad cars would be completely filled at all times when they are moved from place to place—thereby eliminating the "deadhead" run of moving empty cars.

A PIPELINE company must have adequate gas reserves to obtain a certificate to serve the additional consumers desiring gas service, and to obtain financing for the expansion to serve such customers. During the past few years most of the gas which has been available to the pipelines has had to be purchased subject to high minimum take-or-pay provisions. The pipeline must contract to take large quantities of gas throughout the year, especially when gas is purchased from gasoline plants. The success of a pipeline's ability to purchase gas, particularly under today's competition for supply, is due in large part to the very fact that the pipeline can assure the producer that he has an expanding market which will require substantial takes of gas in the summer as well as in the winter. Thus, the addition of large off-peak boiler fuel loads helps the pipeline obtain additional reserves, rather than diminishing the gas supply of the pipeline company, and has the effect of placing the pipeline company in an improved trading position with the producers.

THE cost benefits to the public of off-peak boiler fuel sales are also substantial. Although the economies resulting from such off-peak sales should be treated on a national scale, since it is a nationwide problem that we are discussing, let us take a look at the advantages of such sales on just one system—that of Northern Natural Gas Company. Since 1950, these off-peak sales have contributed over $42 million toward the fixed cost of the pipeline which would have otherwise

ELECTRIC ENERGY PRODUCTION BY COAL AND GAS
1949-55
(Billions of Kilowatt-hours)

	Amount Generated		*Increase over Prior Years*					
			Coal		*Gas*		*Total*	
Year	*Coal*	*Gas*	*Amount Generated*	*Per Cent*	*Amount Generated*	*Per Cent*	*Amount Generated*	*Per Cent*
1955	301.6	95.3	62.5	97.5	1.6	2.5	64.1	100
1954	239.1	93.7	20.2	59.2	13.9	40.8	34.1	100
1953	218.9	79.5	23.5	67.5	11.3	32.5	34.8	100
1952	195.4	68.5	10.2	46.2	11.9	53.8	22.1	100
1951	185.2	56.6	30.7	71.9	12.0	28.1	42.7	100
1950	154.5	44.6	19.0	71.4	7.6	28.6	26.6	100
1949	135.5	37.0						

Source, "Consumption of Fuel for Production of Electric Energy"—1954 publication FPC S-119, issued by Federal Power Commission; 1955 data compiled from thirty-sixth annual report of the Federal Power Commission, 1956.

had to be paid by the domestic customers. This contribution is the difference between the actual out-of-pocket cost to Northern of making such sales and the revenue that Northern received for the sales at the town border; it is a contribution to the fixed costs of transporting gas through the pipeline. Chart II, page 567, shows this tremendous contribution to lower costs for the domestic customers on Northern's system.

It should be noted that the amount shown does not include additional contributions to purchased gas costs which might have been payable under minimum take-or-pay provisions in the absence of such loads. In addition, each distributor sold to the boiler fuel consumers at a price that, conservatively, produced another $30 million of contribution to the fixed costs of the distribution systems. Without the boiler fuel loads, these fixed costs would otherwise have had to be paid by the domestic consumer. Thus, on one pipeline system alone, since 1950, the boiler fuel load has contributed $70 million to meeting the fixed costs of the pipeline and distributing systems which serve the ultimate consumers.

The Fallacies of Arguments by Opponents

CERTAIN interests seek to deprive the consumers of these tremendous benefits by urging the Federal Power Commission to deny issuing the requisite authorization for the sale of natural gas for electric generation.

The proposition that the commission should direct natural gas consumption away from low-grade uses toward high-grade uses has a lengthy historical background. The Natural Gas Investigation in 1945 and 1946 (Docket No. G-580) thoroughly covered this area. As a matter of fact, the Memphis Natural Gas Company case in 1944 (Docket No. G-522) in which federal end-use control was a major feature, was partly responsible for the institution of this industry-wide investigation.[3]

Federal Power Commission policy in this matter of end-use control is not clear cut. It is imperative that the logical implications of any administrative regulation encompassing the control of the end use of natural gas be clearly understood.

As indicated previously, the competing fuel—coal and those associated with the production and transportation of coal—would, of course, profit if natural gas pipeline companies can be prevented from attaching large generating station loads. It is evident, however, that the prime determinant of any action by the Federal Power Commission is the public interest and that any problem must be presented on such basis. As a result, the concept of direct end-use control is generally advocated in the context of public interest, of which a few phrases—superior use as contrasted with inferior use, conservation, selling below cost—are oft encountered.

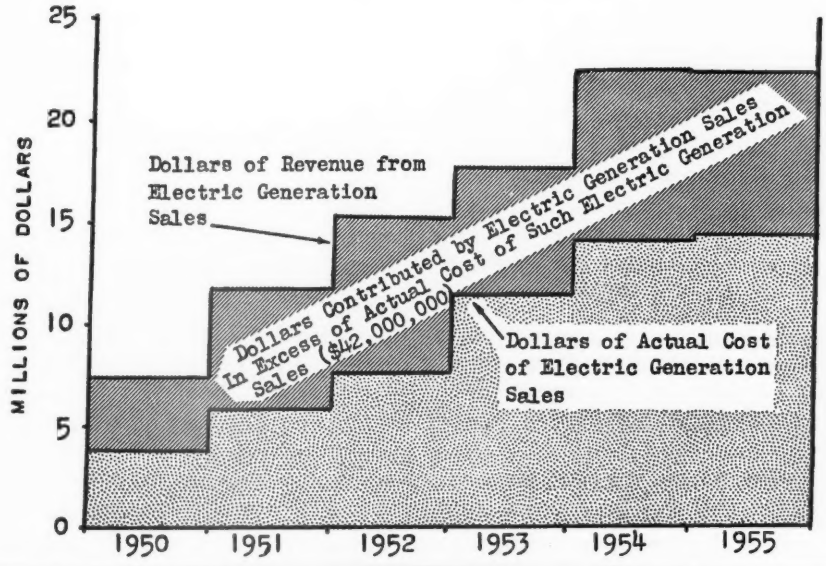
LIKE the politician who states that he is opposed to sin and thereby implies his political opponent is not so opposed, the end-use advocate attempts to imply that the pipeline company opposing end-use control is opposed to superior use and in favor of inferior use; that the pipeline company is opposed to conservation; that the pipeline company believes in selling below cost. This, of course, is just not so.

It is desirable at first to comment upon the very concept of superior and inferior

[3] 56 PUR NS 271.

CHART II

SAVINGS TO DOMESTIC CUSTOMERS RESULTING FROM SALE OF GAS FOR ELECTRIC GENERATION



use. Presumably, the concept is that gas is a superior fuel; that use of gas as boiler fuel in an electric-generating station is wasteful because coal can do the job equally well; and that, therefore, gas is demeaned by being used where coal can do the job equally well. We agree that gas is a fuel with superior characteristics, of which cleanliness in use and ease in control are typical. We agree that coal can do the job of generating electricity *if cost is not considered.* By the same standard the competing fuel for most uses of natural gas does the job as well, or almost as well, *if cost is not considered.* Gas competes with electricity for cooking, water heating, and in some areas for house heating; yet gas used for such purposes is not considered as an inferior use. The standards, if there be any, which determine whether a particular use of gas is inferior or superior have never been clearly defined; certainly, the conclusion should not be one of intuition or the effect on the private interests of those who handle fuels competing with natural gas.

THE conservation argument states that boiler fuel consumption of natural gas is an inferior usage for a superior fuel, and that the limited natural gas reserves available in the nation require the conservation of these reserves for superior uses. The superior qualities of natural gas relate to its peculiar adaptability for certain uses, presumably cleanliness in use, controlled heating, etc. The superiority of natural gas over other fuels for all cate-

gories of consumption is self-evident and its growth in importance in the past ten years is adequate witness to this fact.

The concept of conservation, as propounded by the advocates of end-use control, is difficult to comprehend. It is most certainly neither a technological nor an economic proposition. If anything, their concept infers that, given the physical characteristics, fuel should be confined to the most convenient or beneficial uses regardless of any other factors. Space heating, cooking, and water heating are probably the most significant "convenient" usages to which proponents would confine the use of gas.

We can all sympathize with the efforts to prolong or preserve the natural gas reserves. *No one is more interested in sustaining the life of gas reserves than pipelines and distributors with millions of dollars invested. But is the limiting of end use of gas a sound foundation on which to base a policy? We do not think so. We cannot agree that gas should be limited to only domestic uses. The end-use advocate, however, believes it should be. To do so would cost the domestic consumers untold millions of dollars.* These are the very customers the end-use theorists would have the public believe they are trying to protect. We cannot see how any benefit can be derived by the domestic consumer twenty or thirty years from now if the cost today of the product becomes prohibitive.

Of course pipeline companies are strongly in favor of the conservation of natural gas, but we are in sharp disagreement with the end-use control advocate as to what constitutes conservation. Conservation is not the nonuse of gas, but the wise use of gas. Traditionally, conservation measures have been taken to obtain maximum economic recovery for irreplaceable resources and the sustained yield or indefinite life for replacement resources. For hydrocarbons, this has meant the unitization of fields, the establishment of allowables based on reserves in place and market conditions, the limitations placed on gas flaring, and other conservation measures. Conservation has not meant the controlled consumption of the end product by forbidding or proscribing certain uses, but rather the wise and economic use in a free market.

Natural gas is the only hydrocarbon presently under price regulation. It must compete with the unregulated coal and oil industries. There are inherent competitive disadvantages to the natural gas companies of being a regulated industry. The major disadvantage is the necessity of sometimes elaborate and time-consuming filings and hearings before an off-peak sale can be consummated. Unlike the regulated natural gas industry, the oil and coal industries can consummate contracts and begin deliveries within a matter of days or at the most weeks. The unregulated industries can, if necessary, cut prices overnight to displace the off-peak natural gas load for industrial use.

The last concept offered by the end-use control advocate to support the prevention of the sale of gas for boiler fuel is that such gas should not be sold below cost. Of course, we in the pipeline industry agree with the basic concept that no sale should be made below cost. But we disagree sharply with the end-use control advocate as to what constitutes cost. It should be mentioned that this point was

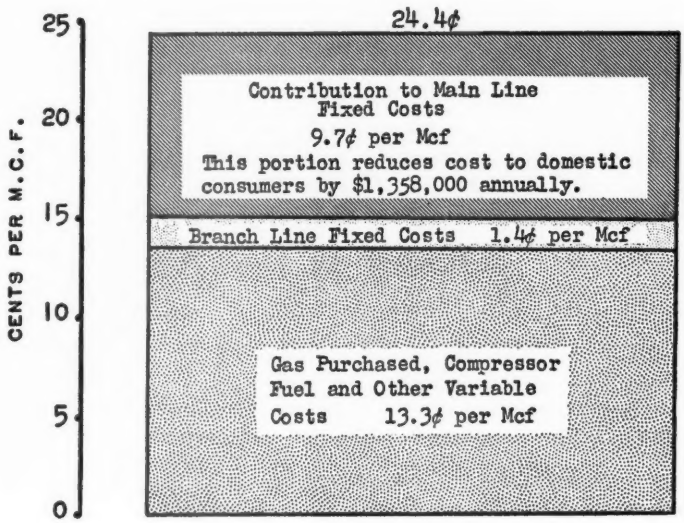
perhaps the major aspect around which the Black Dog decision revolved: It was basic to the majority decision first denying the certificate, and much of the additional facts presented in the rehearing application, which led the commission to reverse and grant the certificate, bore upon this subject.

The facts are these: The sale by Northern Natural to Black Dog is an off-peak interruptible industrial sale. The only costs that could be directly attributed to the delivery from the pipeline system are the cost of gas purchased, cost of compressor fuel, and certain other small cost elements totaling 13.3 cents per Mcf; plus the costs related to the minor one-mile connection to the station costing $137,000; a total cost of approximately 14.7 cents per Mcf. The sales price of Northern Natural equates to 24.4 cents per Mcf of natural gas delivered; or 9.7 cents per Mcf above the increment cost to Northern Natural of rendering the service. Thus, this one sale alone contributes $1.3 million annually toward lowering the cost of gas to domestic consumers. See Chart III, this page.

The commission initially concluded that 26 cents per Mcf was the "commodity" cost of gas delivered, and that the sales price would have to be at least equal to 26 cents per Mcf if the company were to recover "properly allocated" costs. At 26 cents per Mcf, the sale to the Black Dog generating station would not have been competitive with coal, and Northern could not have made the sale.

CHART III

NORTHERN'S SALE PRICE TO BLACK DOG POWER PLANT IS OVER AND ABOVE THE DIRECT COST TO NORTHERN



THE background to the matter is somewhat lengthy. The Federal Power Commission has jurisdiction over rates for sales for resale made by pipeline companies, and does not have rate jurisdiction over the sales made directly for consumption. Thus, in exercising its rate authority, the commission has been confronted with the allocation of costs between such two classes of sales since the early days of its administration of the Natural Gas Act. During the period from the end of the war to approximately 1951-52, the commission established an allocation formula which has been used rigidly since then. In brief, the formula allocates all variable costs in accordance with the annual volumes of gas delivered and allocates the fixed costs of transmission one-half in accordance with the demands of the respective groups, and one-half in accordance with the volumes. The fixed costs of gathering gas, which are substantial for the operations of Northern Natural Gas Company, are allocated 100 per cent in accordance with the volume of gas delivered. The 26 cents mentioned by the commission as cited above represents the sum of the fixed costs and variable costs which are allocated in accordance with volume: 13.3 cents of the 26 cents constituting variable costs and 12.7 constituting fixed costs.

The 50 per cent of transmission fixed costs and the 100 per cent of gathering fixed costs which go into the resulting 26 cents are arbitrary or judgment percentages which are not immutable, but have been changed by the commission itself during the years of administering the Natural Gas Act. The percentages themselves, and the allocation formula, were developed at a time when the relative levels of natural gas and coal costs were much more favorable to gas than they are today, and when the allocation formula "commodity" cost resultant—the sum of variable and fixed cost components allocated in accordance with the volume of delivery —did not exceed the cost of competitive fuels. At no time has the commission stated that the above-described rigid allocation formula measures "actual costs" of rendering one specific service. According to the commission the cost allocation formula provides a measure of equity and fairness to the jurisdictional sales, and equity to jurisdictional sales is the goal of the allocation formula,[4] rather than a realistic costing to an individual off-peak sale made under severely competitive conditions.

THIS close industrial competitive fuel situation experienced for the Black Dog sale is not an isolated case on the Northern Natural system. It exists throughout the system; it exists throughout the systems of the distributors served by Northern Natural, and, in all probability, is not uncommon throughout the industry. Because Northern Natural meets this active competition, and still sells gas at prices which contribute substantial amounts to the fixed costs of transporting the gas, it is able to provide natural gas for domestic and residential heating and cooking at lower rates.

The commission, on rehearing, properly concluded that an allocation of system-wide costs was unnecessary. The pricing of an inferior, or interruptible service, above *increment* cost but below the *average* cost of service advocated by Northern

[4] See "Is FPC Cost Allocation Equitable?" by Larry Shomaker, PUBLIC UTILITIES FORTNIGHTLY, November 6, 1952, Vol. L, No. 10, for more complete discussion.

Natural is hardly novel or revolutionary. Barnes, in his *Economics of Public Utility Regulation,* states:

> It will clarify the discussion which follows if attention is devoted briefly to the functions of price. The first and primary function of price is to yield a total revenue sufficient to cover the total costs of rendering the service. The price charged for the individual service should be sufficient to cover at least the out-of-pocket costs attributable to that service. The maximum price for any service is set by a value of the service to consumers; that is, the utility must not charge a price so high that consumers will cease to utilize the service. Within these limits—a maximum set by the value of the service and a minimum set by the out-of-pocket costs of rendering the particular service—there is a range for judgment with respect to the specific rate for the service.

THE United States court of appeals for the District of Columbia in its June 20, 1957, decision in the Black Dog case also recognized the validity of testing the economics of an individual interruptible industrial sale on an incremental cost basis when it stated:

> The record also supports the commission's finding that Northern Natural will derive a net profit from the Black Dog sales after the deduction of the incremental cost of service specifically attributable thereto. The fact that the proposed price to Northern States will exceed Northern Natural's established commodity charge was a sufficient check on the direct evidence upon which the finding was based. An allocation of system-wide costs was unnecessary in the circumstances.[5]

Many specific illustrations can be found of such pricing above increment costs. In the electric rates regulated by the Federal Power Commission under the Federal Power Act, "economy interchanges" between electric companies—the sale of off-peak energy—on a basis reflecting increment costs alone—are almost universal. Airlines, hotels, and others provide off-season service at substantially reduced rates. The margin between an overseas air-line ticket during the peak of the tourist season during the summer and during the off-season may amount to as much as 30 per cent. The cost of luxury hotel accommodations in Miami during the winter peak season may be more than double the room charge for the summer guest.

IN every instance where a company's cost structure is heavily weighted with fixed investment costs and its capacity is only partially utilized at certain times of the day or the year, it would be foolhardy indeed if the company priced itself out of the market through a rigid allocation formula. By any standard of business logic, if the additional revenues from making an additional sale are greater than the additional costs incurred in making that sale, then the sale is profitable. And where, as in the pipeline industry, the company is regulated on an over-all fair return basis, the profits of such added sales redound to lower the rates that would otherwise be paid by those for whom the system was constructed. It is the ultimate consumer that benefits.

[5] See National Coal Association et al. *v.* Federal Power Commission et al. USCA(DC), No. 13,582 (June 20, 1957).

Conclusion

PIPELINES are built primarily to supply the firm requirements of the market. Pipeline companies want to supply this service as economically as possible. To do so the company needs to fill its lines as much as possible with loads that will accomplish this purpose. This can be done by the sale of gas to large volume interruptible loads. Pipeline companies do not agree that they sell any gas below cost; instead, it has been conclusively proven that this is not the fact.

Natural gas is the only hydrocarbon presently under price regulation. It must compete with the unregulated coal and oil industries. There are inherent disadvantages in meeting competition occasioned by such regulation. Unlike the regulated natural gas industry, the oil and coal industries can move quickly; they can consummate contracts and begin deliveries within a matter of days or, at the most, weeks. The unregulated industries can, if needed, change prices overnight to meet a competitive situation. Illustrative of the regulatory burden upon the pipeline company is the fact that the period of time that elapsed between Northern Natural's original filing of an application to serve the Black Dog generating station and the time of final authorization was more than two years. This statement of elapsed time is not intended as a criticism of the Federal Power Commission which must regulate in the public interest or of its procedures which of necessity are designed to protect the public interest. But it does point up the fact that when end-use control is given serious and sustained consideration, then the benefits that the large volume interruptible loads provide to the domestic house-heating customer are deferred or delayed.

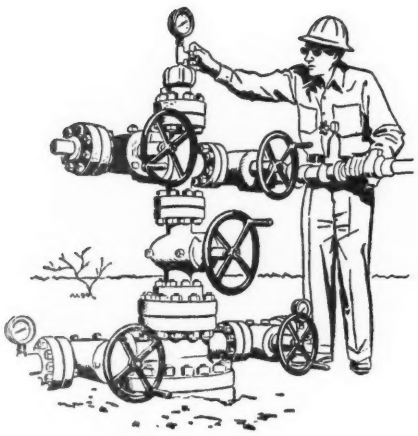
THE natural gas industry has developed by competing with other fuels as actively as possible. Within our framework as a regulated public utility we have endeavored to maximize our income and grow as rapidly as economically feasible to meet the demands of the consuming public. If in the process of meeting these demands for natural gas we have been successful in competing with other fuels in various markets, that is no reason to limit our ability to effectively compete.

The President's Materials Policy Commission summed up this complex problem in the following manner:

> The argument for direct end-use control must be tempered by consideration of the difficulties in the way of a rapid development of facilities to extend the market to high-grade uses, and the contribution of industrial sales in carrying out part of the costs of such development. There appears to be no economic basis for designing curbs on low-grade uses that would be more valid and more suitable than market forces in guiding the gas to the highest-grade use.

¶ "[THIS *is*] *an age when almost every group from farmers to veterans to businessmen to labor seems to think it can profit by creating artificial situations favorable today—but perhaps not so favorable tomorrow, when inexorable economic forces have their say.*"

—EDITORIAL STATEMENT,
The Wall Street Journal.



Making Good Use of Gas

Challenges are old and welcome friends to the members of the Gas Appliance Manufacturers Association. The versatility of gas, improved appliances and equipment, and popular appeal have given a boost to the industry's outlook.

By CLIFFORD V. COONS*
PRESIDENT, GAS APPLIANCE MANUFACTURERS ASSOCIATION

SOMEWHERE today, some member firm of the Gas Appliance Manufacturers Association is delivering to a manufacturing plant a specialized gas burner for industrial use. It is a dark, harsh-looking piece of equipment, perhaps essentially a tool to be added to another tool. It is not very big, nor very expensive, but it will do a tremendous amount of work, may be operating night and day, and may consume fuel running into hundreds or even thousands of dollars per year.

A few miles away, another GAMA member's product, glistening in chrome and porcelain enamel, slides into place in a gleaming new kitchen. It is an automatic gas clothes dryer and, by using it only twenty hours a month, the proud owner will free herself from the chapped hands and split clothespins of an age-old wash-line routine. The utility's added revenue may be the price of a pack or two of cigarettes per month—in some places, well under the price of one pack.

THESE two transactions, differing so widely in their immediate economic impact and in the engineering and sales promotion efforts behind them, have a great deal in common. In each case the customer is going to make good use of gas—better use than ever before possible—and is contributing to the mass production and

*Also executive vice president, Rheem Manufacturing Company. For additional personal note, see "Pages with the Editors."

mass distribution economies, making further advances possible for the fuel.

Essentially, GAMA is devoted to the task of helping more people make good use of gas in more ways, and of furthering the interests of the manufacturers of the appliance and equipment items for the production, distribution, and utilization of the fuel. It has some 575 member companies in 19 product divisions and a small but highly skilled paid staff headed by Harold Massey, managing director.

THE tasks of these GAMA representatives, and of the countless member company aides who work with them on various projects, are seldom simple, and vary greatly from one period to the next. Only six years ago a very important part of the work was helping show the essential nature of products as a basis for metal allocations during a defense emergency. Today, with virtually every shortage behind us, the association is helping co-ordinate certain sales promotion efforts designed to narrow the gap between increased capacity and temporarily reduced demand.

"Temporarily" is a loose word, but it recognizes the inevitable rise in demand as higher postdepression birth rates are translated into marriages and household formations in the 1960's. Gas appliance and equipment manufacturers cannot just coast along until then, and have to grapple with many difficulties in the highly competitive situation immediately at hand. Even though gas household appliance and equipment items might be said to be doing well, on a unit volume basis, by any normal standard, the slide from the peaks of 1955 and 1956 has serious effects.

Some of the key figures may be seen in the table on page 575, prepared by GAMA after a survey of manufacturers. It compares 1956 shipments with prospects, as of shortly after midyear, for 1957 and 1958.

Thus the expectation, generally, is for an upturn in 1958, but not enough to carry back to 1956 levels. Among items not listed in the table, most gas clothes dryer manufacturers also look for improved sales in 1958, and it is anticipated the domestic gas incinerator will show an increase of 22 per cent.

A very substantial part of the sales dip can be traced directly to the decline in housing construction. Additionally, there is the element of long appliance life, and the fact that years of prosperous times have blotted up some of the most obvious market for items going into home modernization and improvement.

The very factor of product durability that helps assure gas utilities a constantly rising list of customers, makes the appliance manufacturer more subject to variations in his sales, despite long-term growth trends.

HOWEVER, we have in our favor several factors denied many others in durables fields, and they stem from the dynamic growth of the natural gas and liquefied petroleum gas industries. GAMA's program is to help manufacturers make the most of these opportunities.

Great advantages stem from the very characteristics of our fuel. It is clean-burning, abundant, readily adaptable to many automatic controls. It can be transported great distances at low cost with great reliability, and with economies growing as volume increases. It is versatile enough to heat everything from a giant shopping center to a corner of a cottage.

It need not be stored by the user, but can be compressed and stored by the distributor near the point of ultimate use.

Secondly, the technical standards governing transmission, distribution, and utilization of gas are very high, and have earned outstanding public acceptance. Whether the customer is a housewife looking for the famed American Gas Association Blue Star seal of approval on a new range, or an industrialist staking his enterprise on the availability of vast quantities of fuel, there is assurance that words will be kept, reputations maintained.

Third is the fact that despite the giant strides in expansion of natural gas pipelines and utility distribution systems there still are millions of prospective customers who do not yet have the fuel, or cannot yet have it in the quantities they desire. Thus we continue to have a strong secular growth factor, along with the more commonly shared elements of increasing population, rising living standards, and technological advances.

These basic advantages, to be sure, do not exist without accompanying challenges, at least for the appliance and equipment manufacturer. I already have noted the temporary market contraction, in line with the dip in housing. Let me be quick to add here the increasingly important generic competition among fuels.

THERE may be no greater tribute to American enterprise than the fact that in a fuel-hungry world, where millions still shiver and where old women still gather bundles of twigs, we find consumers pressed to decide between two, or sometimes among three or four, types of energy. Unquestionably our customers benefit from this competition; but it has its price, and part of the price is the demise of the manufacturer who fails notably in any phase of his business, be it planning, production, finance, or selling.

In meeting this challenge, GAMA and its member companies have been tightening the already strong bonds which link them to the gas pipeline and utility distribution industries and to the distributors of liquefied petroleum gas. There is cooperation in advertising programs at national and local levels, both in broad-based efforts and in specialized moves, such as those to reach builders, restaurant proprietors, or industrialists.

Public relations programs are coordinated with the selling, production, and planning efforts. There is a never-ending interchange of information on production, shipments, and technical requirements. GAMA communicates to its members news of export markets as well as those on the domestic scene; a pipeline construction survey is among its annual projects.

SALES, IN UNITS

	1956	*1957**	*Per Cent Change 1957-56*	*1958**	*Per Cent Change 1958-57*
Domestic Gas Ranges	2,177,400	1,977,700	— 9.2	2,017,400	+2.0
Automatic Gas Water Heaters ..	2,762,100	2,590,600	— 6.2	2,629,000	+1.5
Gas Central Htg. Equipment ...	1,095,800	952,600	—13.1	1,009,500	+6.0
Gas Direct Htg. Equipment ...	1,700,000	1,373,000	—19.2	1,400,000	+2.0
Gas Vented Rec. Wall Heaters ..	325,100	296,500	— 8.8	284,600	—4.0
Gas Floor Furnaces	122,100	102,200	—16.3	94,500	—7.5

*Consensus.

The association and its committees deal actively with codes and regulations affecting our business and effective at every level of government.

Our transportation committee, for example, has saved members many thousands of dollars in obtaining certain product reclassifications for freight shipment purposes. GAMA has helped chop down a forest of unnecessary supplementary appliance construction requirements formerly maintained by utilities and municipalities. It has striven for the widest possible gas product inclusion in the loan guaranty provisions of federal agencies.

WHERE we have tried and failed, there usually is opportunity to rejoin the battle later. The best combined efforts of manufacturers of gas and electric water heaters could not remove the unjust excise tax on this item, but we shall keep trying to show that these heaters belong with untaxed building and plumbing items and not with taxed appliances.

Because gas utilities have such an important rôle in appliance and equipment servicing, this is a matter calling for close co-operation between GAMA and AGA. Manufacturers' responsibilities include seeing to it that necessary parts will be available, and this is another sphere in which it can be said that we have done a fine job for the consumer. Our products last a long time and usually need little or nothing in the way of replacement parts. What they do need almost always is at hand.

However, an appliance can be quite obsolete even though in perfect operating order. When it continues to be used, the particular manufacturer, and the gas industry generally, can suffer, because the user, illogical as it may be, compares the old item of one species with a brand-new one of another.

The same sort of comparison—damaging though unfair—may be made when a consumer first experiences use of a gas item of smallest size, fewest features, and minimum quality, then is introduced to something near the top of a competing line. This may happen when young couples begin married life in rented quarters, then shop for furnishings for their own home.

Thus there is a tremendous amount of logic in the programs of AGA and its member utilities to upgrade customers' appliances and equipment. GAMA and its various divisions have such programs of their own, and help push those of others.

IN this connection, AGA is studying a revitalized program for the "CP" or de luxe quality range, and Pacific coast manufacturers and utilities are working on a proposed "CP Plus 3" promotion. Modern gas ranges have so many improvements in the way of style and colors, automatic controls, automatic ignition, provisions for easy cleaning, and special features, such as rotisseries, that there is every justification for accelerated replacement schedules. GAMA puts this high on its list of objectives.

Each of the other classifications in the gas appliance and equipment family presents its particular type of sales challenge and opportunity. The water heater is being made to handle more and bigger jobs. New features and automatic controls help upgrade direct heating lines. In the industrial field, utilization engineering and fuel pricing assume dominant rôles.

Despite the swift rise in popularity of the gas clothes dryer, that appliance still

has a wide-open field. As of the end of 1956 there were some 36 million residential customers for utility and LP-gas, but the total number of clothes dryers in use, gas and electric, was under 6 million.

The household gas incinerator has tapped a still smaller percentage of its potential. Important advances in new models and additional utility sponsorship add greatly to growth prospects.

We feel sure there will be new large-volume additions to the list of household gas appliance and equipment items as research and product development projects of individual manufacturers and utility units bear fruit. The remarkable growth of gas house heating affords a constant spur to such efforts, and by no means only because of the desire for load-balancing air conditioning.

ONCE a utility is serving a home with enough gas for heating, it usually is a matter of simple and relatively inexpensive piping extensions to bring the fuel to whatever place in the dwelling additional gas-consuming items are desired. When venting is necessary, a wider choice of factory-made equipment now is available to simplify and speed up the task, at modest cost.

Just as utilities have a vital stake in the efficiency and style of gas appliance and equipment products, so the manufacturers of these items have the most urgent interest in the operating cost economies made possible by multiple uses of gas in the home. Both are greatly concerned with trends in home design, and indeed are helping shape such trends, as witness the thousands of homes almost "built around" compact utility rooms.

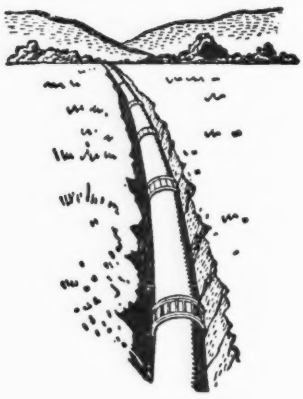
It helps greatly to have each manufacturer and distributor of gas appliances and equipment understand and appreciate gas-consuming items that may be outside his own line. GAMA helps meet this need. New materials and technical applications often are useful for a wide range of products. Or they may be used first on some lines and then be adapted to others.

THE gas utility industry is adding new customers at the rate of a million a year and house-heating customers at better than 1.2 million a year, and the LP-gas industry is continuing its dynamic growth. The opportunities for sale of all gas appliance and equipment items are widening at a time when consumer incomes are at a peak and families more concerned than ever with improving their homes.

GAMA will help them make good use of an ever-increasing supply of gas.

"THE growth of the natural gas industry has been one of the outstanding economic sagas of the postwar period. . . . There appears to be no indication that the demand for this economical and efficient fuel will slacken. However, the industry is facing challenging problems as it continues to expand. Continued FPC regulation of independent gas producers could lead to a decline in new discoveries of natural gas. This may be combatted to some extent by increased pipeline company exploration, but a shrinkage in reserves would ultimately have the effect of putting gas in short supply and raising its price. The problems do not appear insurmountable . . ."

—EXCERPT *from Business Comment, published by The Northern Trust Company.*



Public Ownership in the Gas Utility Field

The number of municipally owned gas systems across the nation doubled between 1950 and 1957. Government ownership in the gas business is no longer a purely academic topic. It not only exists but appears to be growing.

By FRANK C. SULLIVAN*

As gas executives of the nation forgather this year at St. Louis, Missouri, for the annual convention of the American Gas Association, the skies over their industry's horizon seem bright with promise.

Demand for their "miracle fuel" continues insatiable and every passing day brings more and more consumers onto their distribution lines; capital funds for construction and betterments are not easy to come by in a tight and highly competitive money market but, by paying more and working harder, they manage to keep fairly abreast of incessant capital demands; there is hardly ever enough gas to go all the way around after domestic and firm industrial consumption is satisfied, but more is on the way; the problem of compensatory rates has been, and probably will remain, a constant source of concern and there is always the competitive fuel situation to buck.

But these are hardly new or novel headaches; like an intermittent migraine, they intensify or diminish, according to circumstances, and the gas executive has learned—if not to conquer all simultaneously—at least to live amicably with them and therefore become conditioned to their existence.

*Public relations director, Southern California Gas Company. For additional personal note, see "Pages with the Editors."

As the gas men met in annual conclave to compare notes, much of inspiring importance remained on the credit side. They could tot these up with a full measure of satisfaction and a sense of pride in the industry's achievements which has in it no vestige of immodesty. They had served their nation and its people well during a critical period of history, where aggressive imagination, a determination to accomplish and a willingness to risk were required to supply their product for a growing market.

These qualities they had furnished in full measure.

BENEATH the fertile plains, under the unplowed loam of remote valleys, over deserts, and through the hard scrabble of mountain shale ran a national network of pipelines carrying gas from where it lay in the ground to where they wanted it to be, and great plans for greater networks were in the making. At the flick of a finger, the housewife thousands of miles away from the source of this genie of modern times, puts it to work for her, hardly knowing that she is the recipient of a miracle more wondrous than any worked by Aladdin with his lamp.

Industries expand; turbines roar; compressors pound—as gas goes to market.

From 1953 to 1956, the gas industry spent $5.3 billion for gas construction. During the period 1957 to 1960 an additional $8.7 billion will be expended for the same purpose, with $3.9 billion of this amount scheduled for gas transmission purposes.

These figures, reflecting both purpose and muscle, and announced by AGA last July 7th, reportedly astonished the nation, and particularly a portion of it residing in Washington, D. C., where, through custom and predilection, they are somewhat inured to hearing large figures bandied about, but where, too, a vocal minority entertain ideological doubts regarding the ability of private enterprise to do any job as competently or speedily as government.

Aside from these past and proposed expenditures, the record discloses that at the end of last June, natural gas common stocks were 11 per cent higher than a year ago and annual dividend payments, averaging $1.91 per share, were 9.8 per cent higher. This, in the face of regulatory lag on earnings in several quarters, and rates of return not always in the most adequate areas of the "zone of reasonableness."

AND the industry was doubtless heartened, too, by the prediction of Lyon F. Terry, vice president of the Chase Manhattan Bank, who said in July, 1957, that the nation's total future supply of natural gas can be reasonably estimated at a minimum of 1,200 trillion cubic feet.

He continued with a warning that "the day of surplus gas and cheap gas is over" and concluded that "from here on, the consumers will have to pay the increasing costs of the producers and explorers who will need to be accorded sufficient profit and freedom of action to stimulate them to continue exploring for new reserves of natural gas."

The view expressed by Mr. Terry with regard to the necessities of the producers and explorers might be applied, with equal veracity, to the needs of the transporters and final distributors—once the gas is available, for they, too, require sufficient profit and sufficient freedom of action to

permit them to do the job that has to be done.

But, on the whole, the industry is burgeoning—and if one or several capital, operating, or supply problems develop here and there to throw a shadow on the sun, they, too, will pass as a summer shower which clears the air and settles the dust.

Therefore, the reasonable observer, speculating on the future, and bearing in mind the past, would feel compelled to conclude that, barring the unforeseen and the unpredictable, the industry would take care of itself, its customers, and its investor-owners and, by doing so, serve the public interest in the highest and finest sense.

AND, yet, with all this splendid record of achievement, and conceding that the future appears to forecast an era of even greater achievement containing problems which can be met and overcome, there is one disquieting development which can neither be overlooked nor underestimated.

The farsighted among the gas men—and there are many of these—regard this as a dark smudge on an otherwise alluring picture.

As of July 1, 1957, there were 487 municipally owned gas systems across the nation—an increase of 287, or nearly two and a half times the number of such municipally owned systems in existence in 1950, a little more than six years ago.

And twelve years ago—in 1945, there were 86 municipally owned systems.

Thus, the subject of public ownership and distribution of gas—once a topic for speculative discourse on many a college campus akin to interplanetary travel—has moved beyond the phase of the fanciful into the area of harsh and indisputable reality. It exists. Not only does it exist but it appears to be growing. How did it happen? What's being done about it? What does it portend?

These are a few of the questions which immediately occur. Once the analyst begins to examine the record—to sift for causes and to scrutinize effect—once he begins to ponder over the rather imposing stack of reports from the public relations folk of AGA, to study the views of men such as Robert C. Hayes, vice president and executive director of the Association of Washington Gas Utilities, Seattle, Washington, who is daily fighting the battle against municipal encroachment; of James J. Diesing, public relations director of the Kansas-Nebraska Natural Gas Company, Inc.; of Vincent R. Fowler, vice president, Bozell & Jacobs, New York; James M. Beall, public information director of AGA—and others who are

¶ *"OF the 487 municipal gas systems now functioning in the country, the record indicates that 337 have revenues in excess of $25,000 annually. These 337 serve some 1,782,778 customers, as compared to 29,536,600 served by all gas utilities. The municipals had total revenues from sales to ultimate customers last year aggregating $206,981,000, whereas the similar sales of the private gas utilities totaled $3,853,062,000 compared to total gas industry sales."*

cognizant of the public ownership threat, he begins to detect the threads in the pattern.

BASIC to any understanding of what is going on must be the realization—hard though it be to accept—that a survey of public opinion in this country, taken at any time and any place, will disclose a hard core of those who believe that government should not only regulate investor-owned public utilities, but own and operate them as well.

This view begins to manifest itself among seniors in high schools—who, according to certain studies, have shown a woeful lack of understanding regarding private enterprise, corporation profits, and investor ownership.

It continues on to the voting public. It is there—lying just below the surface, ready to respond and burst into flame if the proper fan is applied. This liking for big government—and for social ownership—waxes and wanes according to conditions; sometimes the trend line is down, sometimes it turns upward, with usually a safe majority on the side of private enterprise. But among the lowest-income groups the liking for big government is strongest, and it exists with some tenacity in the less skilled occupations, among union members and college teachers.

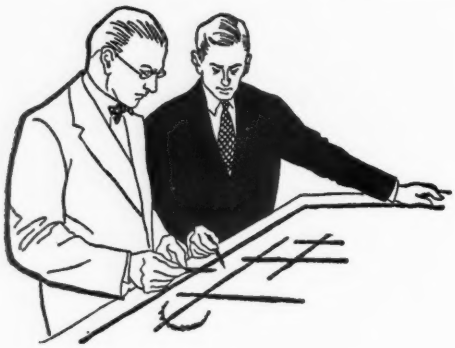
If to these survey findings you add the further fact that opinion probings reveal a goodly portion of the consuming public thinks that about all that is required to distribute gas is to "stick" a pipe into the ground, you begin to appreciate the reasons which motivate gas men unwilling to accept developments in the area of public ownership of gas with complete complacency.

SPECIALIZED studies of the gas and utility customer have developed information on other interesting aspects of the public psyche.

For example, he has the view that utilities, selling something which he considers basic to life, are somehow treating him unfairly if they make a profit out of their service. In purchasing gas or electricity, he resents what he regards as lack of freedom to choose. He feels—the survey experts say—that he *must* deal with the local gas or electric company, and this fancied compulsion arouses his inner opposition. Add to this the fact that he takes his service for granted—until he does not get it; that he chafes over the knowledge that he is never finished paying for his gas or electric service; that neither gas nor electricity represents a *tangible something* in his mind and that he considers a utility a monopoly, with persistent, although possibly unconscious sinister connotations lurking in the corridors of memory from the Insull days. He does not understand the factors relating to fuel competition. To his mind, nothing is added to gas or electricity by manufacture; *ergo,* good service and low rates are *owed* to him by the gas or electric utility.

Now the foregoing does not necessarily come as news to public relations folks in either the gas or electric industries. They are thoroughly aware that buried deep in the minds of many of their customers these thoughts, as revealed by surveys, exist; and every day they work assiduously in one way or another to combat and overcome such underlying attitudes.

IT is mainly because the utility stands in a potentially delicate public situation that the practice of public relations in the



Unity in the Gas Industry

"NEVER before has such close-knit unity among gas industry public relations executives existed, and this has largely been due to the efforts of AGA leadership. And perhaps never before has such conscious and effective work in the field of public relations been undertaken at the local level. These efforts are all to the good. They offer evidence that throughout the industry there is an understanding of the stakes, and an awakening, as though to silver notes of a trumpet which heralds both a challenge and an opportunity. Therefore, let no one assume that the issue has been lost by default."

gas industry has moved forward apace within the past few years to where today well-devised programs are being diligently prosecuted on all levels—national, state, and local.

But, with a knowledge of these customer attitudes as revealed in depth motivation soundings, it becomes quite easy to understand at least part of the reason for the rash of municipally operated gas systems which has broken out in the nation.

And it becomes equally easy to understand how it is that Title II of the Public Housing Amendments of 1955, with its "pie in the sky" implications; and the siren songs of certain Midwest bond houses and engineering firms falling sweetly upon the ears of city fathers pining for their own gas systems, could cause trouble.

Of the 487 municipal gas systems now functioning in the country, the record indicates that 337 have revenues in excess of $25,000 annually. These 337 serve some 1,782,778 customers, as compared to 29,536,600 served by all gas utilities. The municipals had total revenues from sales to ultimate customers last year aggregating $206,981,000, whereas the similar sales of the private gas utilities totaled $3,853,062,000 compared to total gas industry sales. Thus, as far as total sales

went, the 337 municipals only shared 5.4 per cent of what was available, but if we forget the 5.4 per cent and think instead of the $206,981,000 we are forced to admit that, even in these days of large figures, that still is a powerful lot of money to be going into a socialistic operation—an operation which has all the earmarks of being embarked on quite an expansion program.

FOR the record, it might be profitable to list the states wherein municipal gas systems exist, as well as the states which so far have none.

As of July 1, 1957, the score was as follows:

New England, total of 5, with 4 in Massachusetts, 1 in Connecticut, and none in Maine, New Hampshire, Rhode Island, or Vermont.

Middle Atlantic, 4, with 2 in Pennsylvania and 2 in New York, none in New Jersey.

East North Central, 37, with 17 in Illinois, 10 in Indiana, 4 in Michigan, 6 in Ohio, and none in Wisconsin.

West North Central, 49, with 9 in Iowa, 19 in Kansas, 7 in Minnesota, 4 in Missouri, 7 in Nebraska, 3 in South Dakota, and none in North Dakota.

South Atlantic, 91, with 12 in Florida, 57 in Georgia, 1 in Maryland, 6 in North Carolina, 11 in South Carolina, 4 in Virginia, and none in Delaware, West Virginia, and District of Columbia.

East South Central, 163, with 76 in Alabama, 21 in Kentucky, 26 in Mississippi, and 40 in Tennessee.

West South Central, 118, with 6 in Arkansas, 52 in Louisiana, 19 in Oklahoma, and 41 in Texas.

Mountain states, 14, with 5 in Arizona, 3 in Colorado, 1 in Montana, 5 in New Mexico, none in Idaho, Utah, Wyoming, and Nevada.

Pacific coast, 6, with 5 in California, 1 in Washington, and none in Oregon.

At the moment, therefore, it appears that only 14 states out of the total have not yet succumbed.

IN August, 1955, a $100 million revolving fund was established by the government under terms of Title II of the Housing Act, the fund to be administered by the Federal Housing and Home Finance Agency.

To be eligible for a loan from the fund a community must be of less than 10,000 population, and unable otherwise to finance new or enlarged municipal gas, water, or sewer systems.

The language of the act establishing the size of the municipality eligible for a loan says that the Administrator "shall give priority" to applications of smaller communities, and such communities are defined as follows in § 202, subsection (c) of the act:

> As used in this section, a "smaller municipality" means an incorporated or unincorporated town, or other political subdivision of a state, which had a population of less than 10,000 inhabitants at the time of the last federal census.

It is interesting to reflect on the language quoted here—both as to "priority" and size of city, since some legal counsel are of the opinion that by this language the door actually may be open for loans to larger communities at the option of the Administrator. If such is the case they forecast that the results could be as serious

as those which have developed under the rural electrification program.

The AGA, whose public relations experts have watched the growth of the municipal gas program over the past few years with a coldly speculative eye, report that the first loans made under Title II for municipal gas distribution were authorized last May. Three were granted—all for 30-year period revenue bonds, carrying 4⅜ per cent interest.

The loans were made to South Pittsburgh, Tennessee, $700,000; Wilton, Alabama, $50,000; and Lamar county, Alabama gas district, $680,000. Two loans were refused—one for Corytown, Kentucky, amounting to $110,000; and the second for Double Springs, Alabama, for $365,000.

The report is that other loan applications are on file but the federal agency has adopted the policy of withholding information on either applicants or loans until action has been taken on them.

SIGNIFICANCE of Title II lies less in the area of *what it has done* than in the area of what it may do in the future.

With $100 million of government money at hand—and with the possibility that a new administration and a new Administrator might have stronger philosophical leanings toward public ownership than the present authorities, the application of the provisions of Title II might well spell more serious difficulties for investor ownership of gas than has been the case until this moment.

As a matter of cold fact, however—despite the publicity furor that attended passage of Title II back in 1955—municipal and public ownership of gas has managed to get along very well without its assistance. Their strongest growth has occurred mainly along the routes of pipelines in the southern states, and in the TVA area, and in districts considered economically unfeasible for the extension of investor-owned gas service.

In this connection, it is of interest to remember that REA came into being in 1935 to encourage local co-operatives to provide electricity for farms in "thin" territory where risk capital felt it unwise to venture. In 1936, REA was made a permanent agency of government and up until June 30, 1954, had made loans totaling $2,885,932,099. Although the 1954 figures are the latest available, they furnish irrefutable evidence—if evidence were required—that socialistic government agencies grow to become huge, well-rooted oaks from innocent-appearing acorns.

¶ *". . . a survey of public opinion in this country, taken at any time and any place, will disclose a hard core of those who believe that government should not only regulate investor-owned public utilities, but own and operate them as well. This view begins to manifest itself among seniors in high schools—who, according to certain studies, have shown a woeful lack of understanding regarding private enterprise, corporation profits, and investor ownership. It continues on to the voting public."*

RESEARCH into the reasons why, for example, Alabama has shown a surprising growth in the number of municipal gas systems indicates that perhaps the main one was that many communities subsequently establishing their own systems were apparently outside what was deemed to be economically profitable franchise areas of Alabama private utilities.

But along with this reason, another one existed importantly in the minds of many of the cities—and that was the very practical one based on hope of additional revenues for city coffers. A third reason—cited by only a third as many cities as those who hoped for revenue, was public convenience.

The writer is indebted to Mr. Hayes of the Association of Washington Gas Utilities for a comprehensive report on the status of public ownership of gas in his territory, as well as a penetrating analysis of how the cities there were "sold" on the idea.

He says that during the period 1951-54, when it seemed that natural gas would be available in the state of Washington within a few years, ten cities and towns voted authorization for the revenue bonds necessary to enter the municipal gas business.

These municipalities were Ellensburg, Mount Vernon, Marysville, Moses Lake, Enumclaw, Buckley, Winlock, Ephrata, Quincy, and Soap Lake.

Of this roster, Ellensburg, with 8,750 population and second largest of the group, is the only one that is actually in municipal operation. Gas was turned into the Ellensburg system last January but so far it has only about eighty-three customers, although 811 service lines have been laid. Concluding its plans before the present "tight money" and high interest rate period, Ellensburg sold its bonds at an effective interest rate of 4.706 per cent.

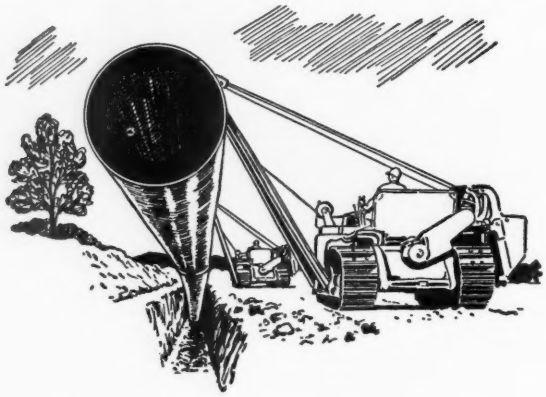
MOSES LAKE, with 9,053 population, largest of the group of ten; Enumclaw, 2,903 population, and Buckley, with 3,325, have sold their bonds, awarded construction contracts, and hope to have municipal gas by the fall of 1957. In each case, they deferred selling bonds as long as possible in the hope that interest rates would lower; they finally sold at an effective rate of 5.74 per cent.

Winlock, population 995, still has its bonds pending, the principal deterrents to proceeding being high interest rates and a lingering question as to whether the project is feasible in fact—as well as the initial theory.

Ephrata, population 8,000; Quincy, population 2,710; and Soap Lake, population 2,850—hard by the public power project of Grand Coulee dam and hence presumably subject to its ideological influence—would prefer private gas utilities to serve them but are prepared to establish their own systems with bond authorizations in case there is no franchise applicant.

Mount Vernon, population 6,000, and Marysville, population, 2,693—last two of the ten—have reversed their positions and have awarded franchises to private gas companies. The people voted the reversal in Mount Vernon, the town council in Marysville. Gas service in Mount Vernon is provided by Pacific Natural Gas Company, while Washington Gas Company expects to have service in Marysville later this year.

Mr. Hayes has this to say regarding the Washington state situation:



Reasons for Public Ownership

"IN seeking farther afield for the reasons which prompt the move toward public ownership, the inquiring analyst does not go far before crossing the trail of sundry financial houses and engineering firms. Their names crop up here and there in newspaper stories and articles, in case histories by gas public relations men of campaigns lost or won, in accounts of what has happened in Alabama, Idaho, Washington, and Nebraska. At times, when the reports come in from gas men, it is easy to detect a note of bitterness in the recital of how one or another bond firm, or engineering company, painted too rosy a picture of net revenues accruing to the municipality, or recommended a far too comprehensive grid of distribution lines for the territory to be served."

Most of the cities that still are considering municipal gas operations are considerable distances from the transmission pipeline, and in other respects have not been considered economically feasible areas by private distribution companies. This has made it difficult to oppose their municipal propositions effectively because the cities and towns have had no other alternative method presented to them.

For example, the Columbia basin cities of Moses Lake, Ephrata, Quincy, and Soap Lake originally would have required a minimum 44-mile supply lateral to bring gas to the city gates, at a cost of nearly $1 million. Now that Pacific Northwest Pipeline Corporation has applied for a FPC certificate to serve Utah-Idaho Sugar Company, a pipeline lateral will be brought within a few miles of them.

While this makes Moses Lake's impending municipal operation more feasible financially, it also has stimulated a private company to seek franchises from

the remaining cities in the area. On the other hand, Mount Vernon, which went private after having voted once to go municipal, is within a few miles of the pipeline and has a potential industrial load that made it attractive to a private company to seek the franchise.

From Mr. Hayes' observations, it is plain that economic considerations, from the city's point of view, or the private company's, have a great deal to do with whether the people of a small city support public or investor ownership.

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Mr. Hayes says that, with the exception of one Washington city, the idea of municipally owned gas systems did not originate with municipal officials.

"It was promoted by a combination of bond houses and engineering firms who profit by financing and engineering fees," he writes.

"Their operations followed a fixed pattern. They told the town councils that natural gas would provide needed revenues for the city. In their feasibility reports, they predicted 45 per cent saturation the first year, and up to 90 per cent saturation in the ninth year. This is in contrast to 20 per cent first-year saturation and a maximum of 55 per cent ninth-year saturation generally projected by investor-owned gas companies. Part of the promoters' high saturation estimate was accounted for by designing grids to cover the whole town, regardless of population density or other economic criteria. Since their engineering fee is a percentage of construction costs, the engineer promoters would make more money on the larger, though less economical, distribution grids.

"ON the basis of these rosy saturation estimates, the promoters forecast low rates to consumers and high profits for the cities. These high saturation figures are essential to justify the low rates proposed.

"But if the anticipated volume does not materialize, the municipal system will be in financial trouble. However, by that time the engineers will have collected their fees, and the bond houses will have sold the bonds.

"Mayors and town councilmen, most of whom are not too familiar with large financial and engineering matters, accepted the promoters' reports at face value, without understanding the potential dangers.

"There have been no 'new starts' among Washington municipalities in the last three years. This does not minimize the danger, however. The fact that there soon will be three or four cities in the gas business may

encourage others to do likewise. There always is the possibility of a city waiting until the private utility has made the necessary investment and developed a profitable operation, then seeking to condemn it. Certainly, the Washington gas utilities would vigorously oppose any such move, but it would be costly, not only in money, but in community relations."

FROM half a continent away, Mr. Hayes' remarks are echoed by Mr. Diesing, of the Kansas-Nebraska Natural Gas Company, who recently presented an illuminating case history of the issue by which his company lost its gas distribution system in Deshler, Nebraska.

In his analysis on the campaign which led to the election of April 2, 1957, by which the company's properties in Deshler were condemned preparatory to public ownership and operation, Mr. Diesing adverts repeatedly to the rôle an engineering firm played in the matter.

One of the firm's employees reportedly first broached the subject of municipal gas operation to the city's utilities superintendent, who supervises the city's own electric-generating plant.

And during the campaign the company waged in an attempt to save its property, a report on feasibility from this firm became a subject for company attack, and public discussion.

Having been furnished with a copy of this report by Mr. Diesing, the writer read it carefully, and was particularly struck by the brand of logic set forth as being the "conclusions" of this 47-page document.

These read:

> There is no question of the feasibility of a municipal gas system in Deshler; obviously, private companies would not seek to engage in it if the operation were not profitable. Many, many cities, both smaller and many times as large as Deshler, have successfully and profitably operated municipal gas systems. Deshler, with its fine utility departments, can certainly do as well.

IN the celebrated struggle of the Alabama Gas Corporation against outside control, *South, The News Magazine of Dixie,* charged in its issue of June 11, 1956, that a "Socialist sellout," devised by New York and Chicago investment brokers, was planned for the company's properties.

The corporation serves a population of 900,000, distributing gas in 49 central

¶ "SPOT *surveys made throughout the country disclose a number of interesting, but not necessarily, surprising facts. In 1955, in Alabama, municipal utilities were paying a higher rate for debt capital than private utilities serving a major segment of customers in Alabama and total private utilities throughout the United States. Interest charges averaged 3.4 and 3.3 per cent, respectively, for private utilities in the state and in the country, while municipal utilities were paying 4 per cent on debt outstanding during the year, in spite of the tax-free status of their obligations.*"

Alabama towns and cities, including industrial Birmingham.

According to the magazine's account, which quoted company executives, outside investment brokers launched a bid for control, hoping to force the utility to sell off parts of its distribution system to cities on its lines.

The stated reason was to permit the brokers to fulfill contracts they held with the municipalities for the purchase of gas properties, obtain fees as buying agents and as bond men, to profit from arranging the financing through taking city bonds at sharp discounts. Additional costs to the cities assertedly would come in engineering and attorney fees.

FROM Idaho comes the report that two midwestern bond houses tutored co-operatives to obtain franchises from municipalities to "organize, finance, construct, and operate municipal gas distribution systems." Thus, the co-op, not the city, would sell bonds to obtain necessary construction and operating capital. So popular did the idea become that, within a short period, twelve nonprofit co-operatives filed articles of incorporation in Idaho and received franchises from their local communities to distribute gas as soon as they could arrange to tap the new Pacific Northwest pipeline.

Fortunately for the cause of investor ownership of gas utilities, the Idaho state supreme court in October, 1956, held the co-op franchise plan to be illegal.

Initially, the development of the co-op scheme was predicated upon the fact that the Idaho state Constitution does not expressly give to municipalities the power to construct, operate, and maintain a gas distribution system.

Noting this point, the Idaho state supreme court said in its decision:

> The creation of the co-operative, the contracts for the purchase of gas and the sale of its bonds, to raise funds for the construction, operation, and maintenance of a gas distribution system and the action of the city of Idaho Falls granting an exclusive franchise for thirty years to the co-operative with the contract provided for by such an ordinance, are all parts of a plan and design devised to enable the city of Idaho Falls to evade and circumvent the limitations and prohibitions of the Constitution and statutes; and to exercise powers not granted to a municipality.
>
> The purpose of the whole plan is to allow the city to do indirectly what it cannot do directly; that is, to construct, operate, and maintain a system for the distribution of gas; and to pay for the same by the creation of indebtedness and liabilities in excess of its revenues for the current year without a vote of the qualified electors and without providing an annual tax to retire such indebtedness.

It seems clear, in view of the court's dictum, that what the public ownership advocates—inspired and guided by others who should know better—cannot do legally and by frontal approach, they are perfectly willing to attempt illegally, and by indirection.

AND what of the results of these essays in municipal ownership of gas? Have the customers suddenly found their rates cut in half? Are the taxpayers beneficiaries?

Spot surveys made throughout the country disclose a number of interesting, but not necessarily, surprising facts.

In 1955, in Alabama, municipal utilities were paying a higher rate for debt capital than private utilities serving a major segment of customers in Alabama and total private utilities throughout the United States. Interest charges averaged 3.4 and 3.3 per cent, respectively, for private utilities in the state and in the country, while municipal utilities were paying 4 per cent on debt outstanding during the year, in spite of the tax-free status of their obligations.

On another sector, municipal gas utilities do not display a good record. Customers served by certain municipals are not being realistically charged for depreciation of the fixed assets necessary to provide them with service.

Two serious financial results may follow: Their failure to set aside sufficient reserves will force them to the security markets for funds for future consumers; and inadequate depreciation accruals will militate against adequate facilities, bringing about a gradual deterioration of utility service for existing consumers, or, as an alternate, will prevent adequate expansion to meet increased industrial and residential demands in a growing community.

PRIVATE utilities in Alabama and the United States set aside, respectively, in 1955, 2.7 and 2.6 per cent of total plant as a reserve for depreciation of fixed assets, while municipal utilities provided for only 0.9 per cent.

In Alabama the tax accruals of the major private distribution utilities in 1955 accounted for 14 cents of each dollar of operating revenues, which was only slightly less than the average of 14.7 cents contributed by all private straight natural gas-distributing utilities of the country. Approximately 34 per cent of the tax payments of the private utilities were used for the support of state and local government, and allied programs.

In contrast, Alabama municipal utilities made total payments in lieu of taxes of only 2.4 cents for each dollar of operating revenues. Economists declare that an additional $1 million would be saved by Alabama taxpayers if municipal utilities had made a contribution in the form of state and local taxes in like ratio to that made by private utilities.

In 1956, the investor-ownership gas industry's total bill for federal, state, and local taxes was a huge $763 million, compared to $207 million only a decade ago.

In Connecticut and Massachusetts, payments in lieu of taxes by municipal utilities on a per dollar operating basis equal one-eleventh of tax accruals of private utility systems in these states, while the in lieu payments of Tennessee municipals, on the same basis, was about one-seventh of the total paid by Tennessee private utilities, according to a survey made in 1954. In that year, failure of the municipals to pay in the same ratio as the private utilities cost the Tennessee taxpayers $2.3 million in tax revenues.

DESPITE the tax, depreciation, and other financial advantages which attach to the municipal—but for which the general taxpayer inevitably pays—the private utility's rates are many times lower, or, if higher, only slightly so, than the municipals. This happy situation probably results largely from the efficient operations of the private companies.

Since this is the case, and because of many other reasons, the investor-owned gas companies have a story to tell, and they are setting about to tell it.

Under the aegis of the AGA they have forewarned the gas industry of the trend and have suggested the development of public information programs to meet the challenge faced on the public ownership front.

This program is proceeding apace, sparked by public relations workshops throughout the country, where gas executives get together to talk shop and trade experiences.

And most of them are thoroughly aware that in the astonishing growth of municipal systems they have a grave problem, despite the admitted fact that as of today these systems have only a miniscule share of the market.

SPEAKING at a recent workshop, David Kerr, director of business development, Southern Union Gas Company, Dallas, Texas, said:

> Municipal ownership is nothing more or less than a form of Socialism. Despite all of its failures, public ownership of gas utilities is growing at such a pace that the privately owned gas industry must marshal all available weapons to meet this danger.
>
> In some cases, local gas distribution systems have fallen into the hands of ill-qualified municipal officials due to default by private utilities operating in the area. In nearly every instance where public ownership exponents dangle the lure of lower rates and better service, their claims can be proven false.
>
> The private utility has an obligation to give the public the facts about municipal ownership and to tell them over and over again.
>
> A sound, aggressive public relations program can keep this enemy on the defensive. He can be beaten—he has been beaten. Municipal ownership is incompatible with the American free enterprise system.

MR. DIESING, with the experience of the Deshler condemnation election behind him, commented as follows:

> Prior to that time I suppose we were very much like other companies which are not directly concerned with the problem. We were aware that other gas companies in other parts of the country were fighting the battle, but we were so busy with other problems that we paid little attention to the wolf that was practically on our doorstep.
>
> It's true that this problem may be confined to a few areas of the country at the present time, but don't let that mislead you. The roots of it can be found in large part in the political philosophies which have been shoved at Americans for the past twenty-five years—that big business or Capitalism is against the best interests of the people; that utilities are inhuman monsters out to devour the little fellows who are at its mercy; that only through government-in-business can the people be protected.

Mr. Diesing continues by stating that each "individual case" will present circumstances which will, of necessity, "be within the province of lawyers, but eventually the issue will be resolved by a vote of the public and whether the gas compa-

ny wins or loses the municipal election will depend upon the climate of public opinion which has been cultivated."

ROBERT E. GINNA, president of the Rochester Gas & Electric Corporation, in analyzing the position of the gas company facing municipal ownership threat, said recently:

> Service plus public relations is the keynote of our entire attack . . . We must win the customer to our side before we can count on him as an ally and the only way this can be accomplished is to treat him like a customer in the same sense that any competitive retail or manufacturing concern would do.
>
> The lowest rates in the country will not endear a utility to a community if its employees offend the public.
>
> We must be sure that the public knows and understands what we are doing. This cannot be confined to the local level. I have no more right to say that the public ownership movement for municipal gas companies in the state of Washington is not my concern than they in that state have to say that the public development of electric power at Niagara Falls is not their concern.
>
> We must present a united industry front from the local point of view in each community, and we must come to the table with clean hands to justify the confidence we seek.

Please note that recurring motifs are sounded in each of these three statements —made by different individuals in different parts of the country upon separate occasions.

These relate to gas industry unity—a common front with which to face the enemy; the recognition that there is a challenge and a threat to investor ownership of the industry; a definite suggestion that efforts must be undertaken and intensified to win the understanding of the public; and, lastly, that the coming battles will be won or lost in the area of public relations, which is to say, on the battleground where public opinion is the arbiter.

CERTAINLY a portion of the prescription demanded by the industry spokesmen has been filled. Never before has such close-knit unity among gas industry public relations executives existed, and this has largely been due to the efforts of AGA leadership.

And perhaps never before has such conscious and effective work in the field of public relations been undertaken at the local level.

These efforts are all to the good.

They offer evidence that throughout the industry there is an understanding of the stakes, and an awakening, as though to silver notes of a trumpet which heralds both a challenge and an opportunity.

Therefore, let no one assume that the issue has been lost by default.

True, there have been defeats but the trend has not been entirely one-sided—there have been victories, too.

And perhaps both wins and losses have been only skirmishes up to this point. Perhaps the major battles are still to come, and, if that is the case, the gas industry will not be found derelict.

The Harris-O'Hara Gas Bill—Boon or Bonanza?

The natural gas bill, a proposed amendment to the Natural Gas Act to free producers from Federal Power Commission, is still before the House of Representatives for possible enactment at the second session, to start next January.

By WILLARD F. STANLEY*

On several occasions President Eisenhower has stressed the need to stimulate the development of the nation's natural gas resources. As a means to this end he has advocated enactment of legislation to reduce to a minimum jurisdiction of the Federal Power Commission over gas sold by producers to gas transmission companies or local gas distributors. The theory is that this would result in an increase in gas prices received by the gas producers which would encourage greater exploration and production of natural gas.

*President, Corporate Services, Inc. For additional personal note, see "Pages with the Editors."

A bill to this effect was enacted near the end of the 84th Congress, only to be vetoed by the President because of evidence of lobbying by the gas interests which he deemed so serious as to require a veto of the bill even at the expense of postponing its benefits for another year.

A substantially similar bill was introduced by Representatives Harris and O'Hara in the first session of the 85th Congress and is now awaiting action on the floor of the House of Representatives. Certain amendments to this bill have been advocated by the administration which

the gas production interests feared would emasculate the measure, but recently the President indicated that the administration would be willing, if necessary to complete the legislation, to forego or mollify these amendments. So it now appears the bill may be debated early in the next session and possibly enacted by the House. The legislation would then come before the Senate for action. With the problem of the amendments apparently under control, chances seem to favor adoption of the bill by both houses and its ultimate signature by the President before the end of second session of the 85th Congress.

DOES the gas production industry need this stimulus to induce it to develop sufficient gas resources for the nation's future requirements? The President thinks so and he must have reached his conclusions on expert advice. Whether a specific inducement is necessary to produce a particular result must always remain a matter of opinion until an opportunity is given to record the results of operation both with and without the inducement. Therefore, the only way to see whether this inducement will stimulate gas development is to enact the bill and compare results thereafter with those before the inducement was given. The same is true, in reverse, with respect to the special depletion allowances for federal tax purposes which for many years have been enjoyed by those producing mineral resources (principally oil and gas). Retention of this favored treatment has been considered essential to encourage maximum development of oil and other mineral resources. Here it would be necessary to eliminate the tax advantage to see what effect this would have on oil development.

Opponents of the pending Harris Bill (and of previous similar legislation)—principally representatives of large cities whose inhabitants use natural gas—have contended that diminution of the Federal Power Commission's jurisdiction over gas production, as provided in the legislation, would inevitably result in increasing the price paid to the producers for their gas, and that these price increases, initially paid by the gas transmission companies (or local distribution systems) would necessarily have to be passed on to the ultimate gas users. They argue that the bill would constitute an unneeded and unfair bonanza for the gas producers. No one seems to have attempted to make any exact estimate of the amount of money that might be involved annually in increased cost of gas to gas users throughout the nation, if the bill is enacted. But those opposing the measure have been unanimous in contending that the amounts involved annually would be very large, often indicated as being very many millions of dollars.

THE utility industry has a dual interest in this legislation, for not only would the price of gas to consumers of gas distribution companies be affected, but, in many cases where electric utilities burn gas under their steam boilers to manufacture electricity, the rise in the price of gas paid by these utilities would have to be passed on to their customers, and would therefore, indirectly, affect electric rates.

The question in this matter has seemed to be "Does the need for stimulating gas development justify the additional cost to consumers which would flow to the gas producers?" This question has not yet been finally answered by the enactment of

the bill, but it seems likely that it has been answered affirmatively in the minds of a majority of the members of both houses of Congress and the administration. This being the case, what more need be said?

A great deal, I think. For, granting the need for encouraging gas development by diminishing Federal Power Commission jurisdiction and thus permitting increase in prices of gas received by gas producers, it still appears that the bill goes far beyond what is needed to accomplish the result desired by the President.

STIMULUS of production has been repeatedly stressed as the principal, if not the sole, reason for the legislation. I have read the pending bill and also analyses thereof made by experts for interested organizations. Different types of gas sales contracts, having different kinds of provisions (in particular, clauses dealing with escalation of prices) are treated differently in the bill as regards freedom from federal commission regulation. But nowhere does it seem to appear in the bill that there is to be any difference in the commission's jurisdiction by reason of the wells from which the gas is derived. The provisions of the bill appear to apply uniformly *both to gas produced from wells already existing before enactment of the measure and those drilled after its enactment.*

Yet how can the application of the bill to existing gas wells (and consequent increase in prices of gas produced thereby) constitute an inducement or stimulus for the development of gas? Why is it necessary in order to induce drilling of a new well, or development of a new gas field, to provide for increasing the price of gas produced from old, presently existing wells, already drilled? The extension of the bill to cover these existing wells, as to which there can be no need of inducement, would seem an unnecessary and inequitable bonanza for the benefit of the owners of these existing gas wells (who may or may not be the owners of the new wells), at the expense of the gas-consuming public (and, indirectly, of the electric-consuming public) throughout the nation.

SURELY it would be feasible to develop a system of measurement to determine the quantity of gas flowing into a pipeline from new and old gas wells. And if it were attempted to hold back gas from the old wells and deliver gas solely or principally from the new, then a system of apportionment of the gas delivered according to estimated reserves of the new and old wells, could be used to determine the proration. The Federal Power Commission could be left with jurisdiction over gas produced from the old wells to the same extent as formerly, and thus would continue to control the price for the sale of that portion of the gas delivered to the pipelines.

Let us assume that 10 million cubic feet of gas were taken into a particular pipeline in a given month (or other designated period), of which 90 per cent came from old and 10 per cent from new wells. Let us next assume the price charged before enactment of the legislation was 10 cents per Mcf. This price would continue (under commission regulation) with respect to the 90 per cent of gas derived from the old wells, while the remaining 10 per cent of gas would be subject to negotiated increase in price outside the commission's jurisdiction. If the price of this 10 per cent of gas were assumed to

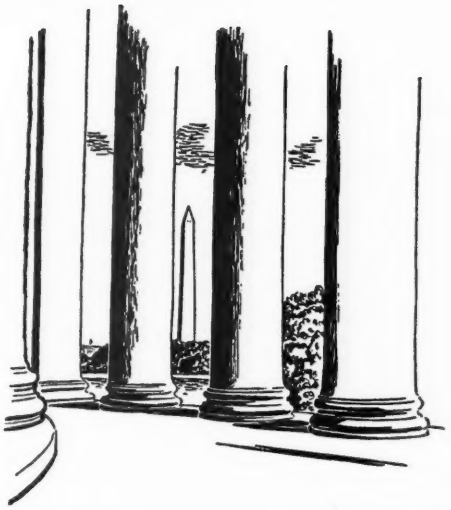
be increased to 12 cents per Mcf, the overall price would be increased from 10 cents to 10.2 cents. This 2 per cent price increase might then ultimately be passed on to the gas consumers (and, indirectly, some electric consumers). It would represent the cost of stimulating the creation of the new fields or new wells from which the 10 per cent of gas was produced. This may well be a fair price to pay for this stimulation. But why should the gas (and electric) consumers be forced to pay an increase in price of 20 per cent (instead of 2 per cent) as would be the case if jurisdiction of the commission over all gas (both from old and new wells) was eliminated and the price increase accordingly applied not to 10 per cent, but to 100 per cent, of the gas flowing into the pipeline in question?

THE 90 per cent-10 per cent relationship is an arbitrary assumption. The 10 per cent would probably be too high soon after the bill's enactment, but this 10 per cent assumed ratio would tend to rise as more and more new wells were created and gas production from older wells gradually dwindled. But for a great many years it is obvious that by far the greater portion of the gas consumed throughout the nation would be produced by the "old" wells and would therefore not be subject to price increase without commission approval. This strongly emphasizes the need for separating the "sheep from the goats" if the American consuming public is not to be made the "goat" by having to pay many millions of dollars yearly in unneeded and unwarranted increases in the price of the products they consume.

The President has repeatedly made stimulation of gas exploration the keystone of this legislation. This aim can be accomplished if an inducement to gas producers in the form of higher gas prices applies to newly developed natural gas resources. It need not and should not apply to already developed resources where it is obvious no inducement is necessary and where application of the terms of the bill would simply operate to transfer from the pockets of the American consuming public to those of the American gas producers many million dollars a year of what could truly be called unearned increment. Furthermore, such a transfer of funds would be a step in the direction of inflation at a time when all the energies of the nation should be concentrated on controlling and preventing price inflation in all commodities, goods, and services.

WITH proper amendments, along the lines suggested above, limiting impact of the legislation to gas produced from newly created wells, the bill would accomplish its intended aim of inducing gas exploration and production—the aim so strongly stressed by the President. At the same time, loss to the consuming public would be held to a minimum. Provisions for proper segregation of gas as between new and old wells can readily be embodied in the bill; certainly such admeasurement of gas cannot be beyond the ingenuity and ability of experts in this field.

Washington and the Utilities



Changes in TVA

On September 19th, a Kansas Republican became the ninth director in the 24-year history of the Tennessee Valley Authority. Arnold R. Jones was sworn in during a brief ceremony witnessed by General Herbert D. Vogel, chairman of the TVA board, Senator Albert Gore (Democrat, Tennessee), and other officials.

President Eisenhower is expected to name a Democrat to the remaining vacancy on the board. The nominee would fill the unexpired term (which has less than three years to run) of the late Dr. Paty. Although the act specifically states that there shall be no political qualifications for appointment to the board, White House aides have apparently decided that the naming of a Democrat would smooth the way for Senate confirmation of Jones, when Congress meets in 1958. Jones still faces some opposition in the Senate Public Works Committee from TVA zealots who are opposed to a radical change in TVA policy making. Senators from the TVA area are urging the appointment of Dr. Brehm, president of the University of Tennessee.

Regardless of what the President may do about the remaining vacancy on the board, some changes in TVA policy seem inevitable. This was indicated last month by the resignation of TVA's general counsel, Joseph T. Swidler. Swidler, who has been with TVA since its creation in 1933, admitted frankly that his decision to resign was dictated by a feeling that the new TVA board should have a free hand in choosing its chief legal adviser. TVA Chairman Vogel, recognizing Swidler's long service, agreed with Swidler's view of the situation, and has accepted the resignation. Other staff changes are in prospect.

FPC Sees Gas Expansion

Large-scale expansion of the natural gas industry to serve almost every state in the Union is continuing, according to a report released recently by Chairman Jerome K. Kuykendall of the Federal Power Commission. This is bad news for the coal industry, which is losing more and more of its market to gas and fuel oil. In the twelve months that ended June 30th, Kuykendall said the commis-

sion authorized $615,966,000 worth of new interstate gas facilities, including 6,800 miles of pipeline and 350,000 horsepower in compressors to push the gas to its destination. This does not cover permits issued to independent producers.

Last month the commission reported interstate pipeline revenues at an all-time high—$2,229,011,530 for the year, an increase of 10.6 per cent over the previous fiscal year. This includes some rate increases collected under bond and subject to rebate if the commission disapproves them after hearings. Applications on file before the commission will, if granted, expand the pipeline system by thousands more miles. They include one which would line up with the now-building trans-Canada pipeline, which will bring natural gas from far western Calgary to Montreal.

Kuykendall said the new facilities authorized in this country will add more than 2,250,000,000 cubic feet daily to the capacity of the nation's pipelines. Big projects—costing $700,000 or more each —accounted for $606 million of the construction cost. He said 156 cities of 50,000 or more in 32 states and the District of Columbia, as well as many smaller communities, will benefit by the expansion.

Benson Defends REA Changes

SECRETARY of Agriculture Ezra Benson has refused to back down on changes made last June in REA loan procedure. Under the new setup, loans to REA borrowers exceeding $500,000 must be approved by Kenneth Scott, director of Agricultural Credit Services, assisted in this responsibility by Wesley D'Ewart, former Montana Representative, now assistant director of Agricultural Credit Services. Criticism of the new arrangement has come mainly from Senator Humphrey (Democrat, Minnesota), who contends that it is a violation of Benson's pledge to confer with Congress before making any major changes. Secretary Benson has once more refused to appear before Senator Humphrey's Governmental Operations Committee on the ground that the committee already has all the information needed.

Secretary Benson insists that his June ruling does not weaken REA and was not a major change requiring clearance with Congress. Now that Congress has adjourned, Humphrey has dropped the issue temporarily, but plans to call Benson again before the committee next year. Humphrey quite evidently fears that the new policy means a cutback in REA loans. This would be especially true of generating and transmission (so-called G&T) loans to super co-ops, because they are mostly in the higher bracket of seven figures or more. Both Scott and David Hamil, REA Administrator, admit that Scott has already turned down several loans.

THE administration is reported to be alarmed over the great increase in REA electric loans. In fiscal 1956, REA disbursed $190 million for such loans. The figure jumped to $301 million in fiscal 1957, ended last June 30th. This represents an increase of nearly 40 per cent and is viewed as inflationary by White House economists. The low interest rate (2 per cent) charged REA borrowers, compared to the 4 per cent interest rate which the U. S. Treasury must pay for money, is attracting borrowers to REA. These considerations are believed to be responsible for White House orders to Benson to hold down the rising pace of loans. One casualty of the new procedure may be the proposed $9 million loan sought by Nebraska public agencies for a transmission line from Fort Randall dam to Grand Island.

Gas Producers Seek New FPC Court Test

THE independent producers of natural gas have gone back to the source—the federal courts—for relief from the federal rate regulation which has had the oil and gas industry in a turmoil for three years.

It was a decision of the United States Supreme Court which brought on federal regulation in 1954. And nine independent producer associations have joined appeal proceedings aimed at getting the high court, eventually, to redefine its 1954 decision in favor of decontrol for the independent producers.

Hence, the industry interest in Saturn Oil & Gas Co., Inc. *v.* Federal Power Commission, now before the tenth circuit court of appeals in Denver. A "friend of the court" brief has been filed by the producer group.

This group wants the Denver court to deny FPC jurisdiction over Saturn because the company is a gas producer only and "neither owns nor operates any pipelines, lead-off pipes, no processing, separating, or manufacturing equipment, nor other gas facilities of any kind.

"Gas sold by Saturn is sold at the wellhead through meters owned by the purchasers of the gas. In no case is the sale of the gas more than a few inches from the wellhead."

By contrast, they say, the 1954 decision which brought FPC control over all producers involved two large integrated companies engaged in the production, gathering, processing, and sale of natural gas—Phillips Petroleum Company and Interstate Natural Gas Company.

"But the operations of Saturn," the producers argue, "bear no resemblance whatever to either Interstate or Phillips. Nor does the operation of thousands of other small unintegrated producers selling gas at the wellhead whose economic fate may well hinge on this case."

Reactors Cannot Explode

HAROLD S. VANCE, acting chairman of the Atomic Energy Commission, told a meeting of the United States Conference of Mayors at New York last month that nuclear reactors cannot explode. He referred to nuclear reactors used for production of power, or for any other purpose. He said they are so constituted that they cannot under any circumstances produce a bomb-like explosion. The AEC chairman likened the relationship between nuclear bombs and reactors to one between lightning and house-line electricity. We accept and do not fear electricity because we have become familiar with it, he explained.

Mr. Vance described a nuclear reactor as a unit employing a tight steel vessel to contain the fuel elements which is, in turn, contained in a thick concrete shielding. All of this is entirely enclosed in a steel containment shell, dome, or sphere.

"It is theoretically possible," Mr. Vance asserted, "that all of these containments could be breached, allowing fuel elements to escape into the atmosphere, just as it is theoretically possible that a foot of snow could fall in New York on the fourth of July."

"Both contingencies are so remote as to be for all practical purposes nonexistent," he declared.

HE told the meeting of mayors that the AEC has operated reactors at its several locations for a total of more than 100 reactor years without a single fatality or even injury to operating personnel, much less to the public at large on account of escaping fission by-products.

Financial News and Comment

By OWEN ELY

Outlook for the Gas Industry

THE phenomenal growth of the natural gas industry in the postwar period is reflected in the accompanying charts on pages 602 and 603, reprinted from the AGA statistical volume *Gas Facts*. For the gas utility industry revenues have increased to over three times the 1945 level (Chart 1) and for the gas pipelines eight or nine times (Chart 2). The composite income account (Chart 3) shows revenues for the industry as a whole at about four and a half times the prewar level, and plant account in 1956 was roughly three times as large as in 1945.

Net earnings have not increased in the same proportion, however. Gas operating income as a percentage of depreciated plant is shown in Chart 4. In the prewar period the return averaged between 7 per cent and 8 per cent on depreciated plant, but with unfavorable regulation during the Truman administration this shrank to less than 6 per cent in 1952, gradually recovering to about 6.7 per cent last year. The two lower sections of the chart show the varying results for transmission and distribution companies. The latter had an excellent year in 1946, earning over 10 per cent when excess profits taxes were canceled, but later dropped to 6 per cent, last year making a slightly better showing than the pipelines.

THE charts do not show the trend for 1957, which has been sharply downward thus far. The income account for the pipeline companies for the twelve months ended June 30, 1957, and for the previous twelve months is shown on page 606. While revenues increased nearly 11 per cent net income declined about 2 per cent. The rate of return declined, since gas utility operating income increased less than 4 per cent while net gas utility plant increased nearly 18 per cent. Weather was an important factor and the relatively warm heating season in 1956-57 accounts in part for the poor recent showing.

Numerous rate increases have been filed with the Federal Power Commission and the state commissions, but many of these have not yet been reflected in revenues, and the regulatory situation remains confused due to the failure of Congress to pass the natural gas bill.

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The very rapid growth of gas revenues in the postwar period may be attributed to four major factors: (1) opening up of many new areas to natural gas through completion of additional new pipelines; (2) rapid conversion of homes from oil heating to gas (see Chart 8); (3) rapid gains in industrial sales (Chart 7); and (4) the effects of rate increases designed to offset the rising field price of gas. Industrial sales in 1956 increased three times faster than the nation's industrial activity —while the industrial activity index was rising 2.9 per cent, industrial sales of gas rose 9.4 per cent. Because of its cheapness and efficient heating capacity, gas is increasingly useful in many industrial processes.

THE current year is one of rapid expansion, despite the drab earnings record. Construction expenditures for the gas utility industry in 1956 approached $1.6 billion, and this year are expected to increase to over $2.1 billion. While a slight letdown is forecast for 1958, a sharp rise in 1959-60 is expected to carry expenditures for the latter year to over $2.3 billion. During the five-year period 1956-60, expenditures are expected to aggregate $10.3 billion compared with $6.3 billion in 1951-55 and $4 billion in 1946-50. Net plant may be expected to increase some 70 per cent or more during this five-year period. Of the $10 billion program, 45 per cent is to be expended for production and storage, 16 per cent for transmission, 34 per cent for distribution, and five per cent for miscellaneous items.

This big expansion program is largely designed to take care of unfilled demands for additional gas for house heating, etc. In some areas, such as the Midwest, there is still a large unfilled backlog of demand which the utility companies are unable to satisfy. In the New York metropolitan area vigorous campaigns are under way to "sell" the householder on the advantages of gas over other fuels.

IS there any danger that the increased cost of gas at the wellhead will gradually check this demand for additional supplies? There has been some fear of this, but thus far it has apparently not been a factor, especially as prices of competing fuels have also advanced. In March this year the Bureau of Labor Statistics Index of Consumer Prices for Solid Fuels and Fuel Oil stood at 139.2 compared with 102.6 average for 1946-50.

A similar index for gas for heating purposes was 121.6 compared with the average of 99.9 for 1946-50, while gas for other uses stood at 116.4 *versus* 99.9.

However, it is probable that the retail cost of gas has lagged behind the field price, due to long-term supply contracts, delays in raising rates, etc. Chart 5 indicates that while natural gas wellhead prices declined in the period 1937-45 when there was little increase in demand, the average price more than doubled from 5 cents per Mcf to nearly 11 cents in the period 1946-56. The increase has continued during 1956-57 and there are reports of new contracts at 16 cents or higher. Ultimately the trend of retail prices may be partly dependent on federal regulation under the new gas bill, which it is hoped will be enacted in 1958.

IN any event, the recent skyrocketing of field prices is a disturbing factor in earnings, particularly for the pipelines. In the twelve months ended June 30, 1957, the number of customers increased 3 per cent, sales to ultimate consumers gained 6 per cent, and sales to other gas utilities for resale were up 9 per cent. Total sales in Mcf increased 8 per cent and revenues 10.6 per cent, the difference being ex-

Chart 1

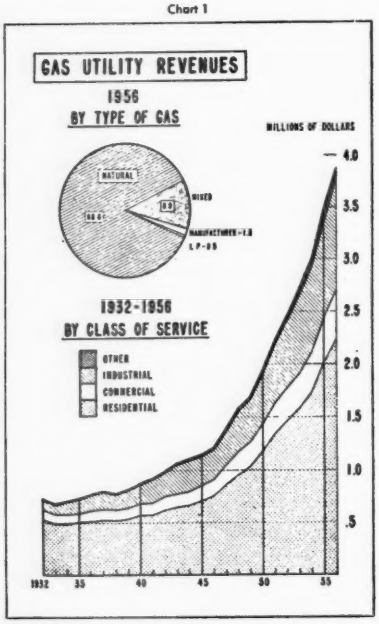


Chart 2

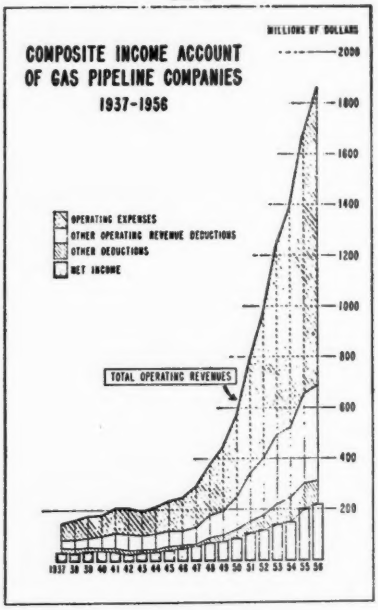


Chart 3

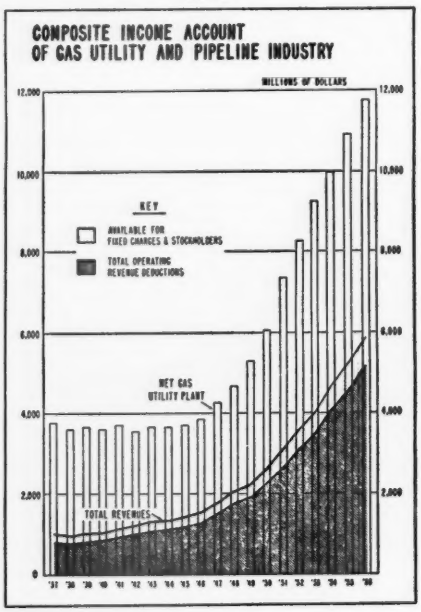
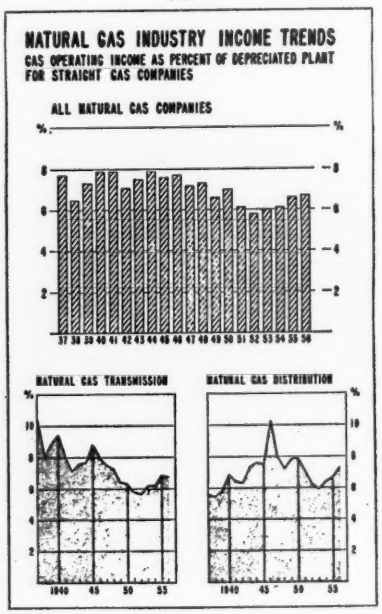


Chart 4



SOURCE: AMERICAN GAS ASSOCIATION

Chart 5

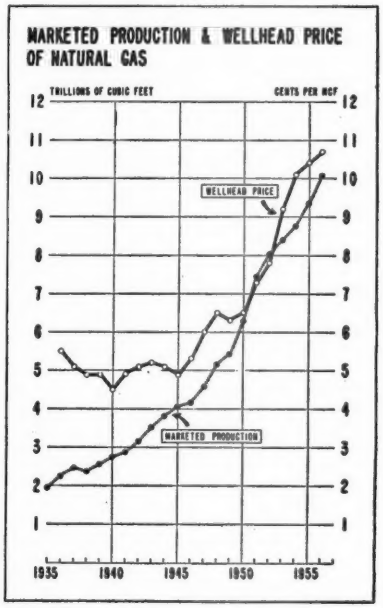


Chart 6

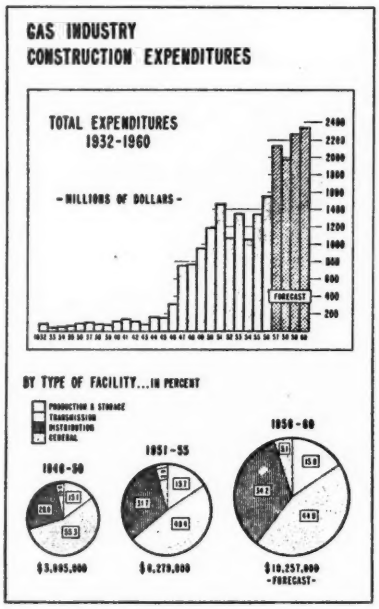


Chart 7

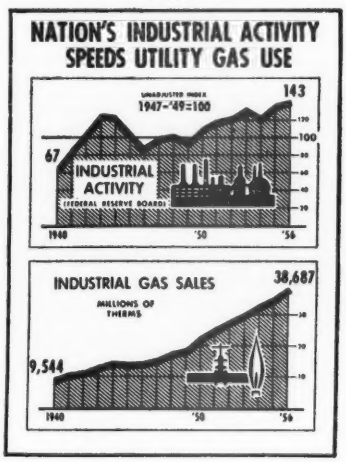
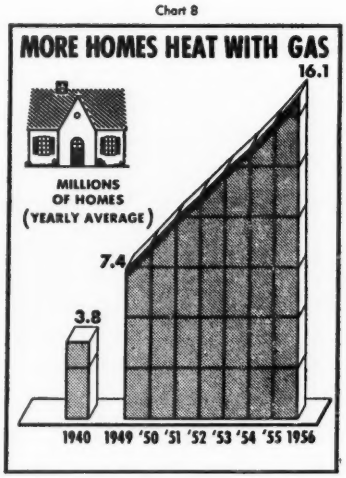


Chart 8



SOURCE: AMERICAN GAS ASSOCIATION

plained by a slight increase in the retail price, from 28.3 cents to 29 cents per Mcf, a gain of 2½ per cent. On the other hand, the cost of purchased gas (plus the relatively small amount spent for production) increased from $1,026 million to $1,175 million, a gain of 14.5 per cent.

While the figures may not be accurate, the cost of gas as indicated by the income statement increased from 14.4 cents to 15.3 cents per Mcf, a gain of 6¼ per cent. Apparently the pipelines were unable to pass along this higher cost of gas in full, because of delays in filing rate applications —plus the five-month suspension period before rate increases were reflected in revenues collected under bond. It is probable also that substantial amounts of gas were sold at low prices which could have been used for house heating if the weather had been favorably cold.

IT is difficult to forecast regulatory and political trends which will affect the industry's ability to obtain an increase in gas supplies without having their net earnings "squeezed" between high field costs and inadequate retail rates, but the industry remains hopeful that the problem will be solved and that the log jam of new rate cases which is now again building up will not handicap the industry's growth. Underground storage facilities are being rapidly increased—the investment in storage pools and wells was $456 million at the end of last year *versus* $177 million in 1950. House-heating customers increased in number 8½ per cent last year and by 1965 is expected to increase by 66 per cent. The industry expects to open up another large potential market when gas air conditioning is perfected and the gas prototype of the electric heat pump is successfully developed. (The AGA Par Committee earmarked $750,000 for air-conditioning research this year, twice the amount originally budgeted.) Arkansas Louisiana Gas Company, which enjoys aggressive management, recently bought Servel's air-conditioning division for $4 million. Many advances and improvements have been made in other appliances such as gas clothes dryers. At the AGA Laboratories, twenty PAR-financed research projects (of which seven were completed) gave major emphasis to domestic gas incinerators and improvements in commercial cooking equipment.

Thus the industry continues to advance on a broad front. At the moment the greatest problem is in the field of rates and regulation, which have a vital bearing on earnings and on the cost of new financing—which recently has been increasing dangerously. What price rapid expansion if 6 per cent has to be paid for senior money, leaving a low margin of return for common stockholders?

IN order to improve the prospects for common stockholders many gas companies are venturing into nonregulated fields such as oil production and refining, petro-chemicals, uranium mining, production of fertilizer, cement, etc. This quest for diversification is typical of the general industrial trend, but it is to be hoped that the gas utilities will not carry it to an extreme. Otherwise, it may become increasingly difficult to analyze their earnings and prospects, and the reputation for inherent stability enjoyed by most utility securities may become clouded, with resulting loss of investor confidence.

Gas Utility Financing Heavy in 1957

THE accompanying chart of gas utility financing indicates that the trend has been similar to that of the electric utilities through August—the total amount has run well in excess of the two previous years.

Apparently high money rates have not had any deterring effect and there has been no real "scarcity" of credit for either gas or electric utility offerings when the buyers' conditions have been met—though these conditions have been a little stiff in some cases.

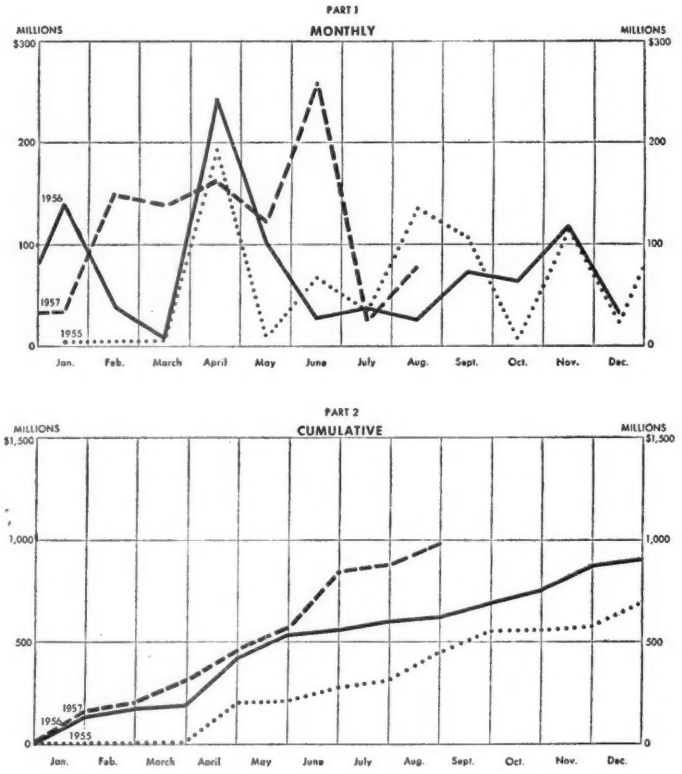
Comparatively little common stock has been sold this year, possibly because of the rather poor earnings record for some gas utilities (due largely to weather conditions). Gas utility financing for the first eight months of 1957 totaled as follows:

	Millions
Bonds	$ 943
Preferred	102
Common	30
Total	$1,075

The gas utilities are expected to sell about $200 million additional securities

PROGRESS OF NEW MONEY FINANCING

BY UTILITY COMPANIES RENDERING PRINCIPALLY GAS SERVICE*



*Covers companies included in the calendar with assets over $35,000,000

Source, Irving Trust Company.

NATURAL GAS PIPELINE COMPANIES
OPERATING REVENUES AND INCOME

Twelve Months Ended June

Item	*1956*	*1957*	*% Change*
Sales of natural gas:			
Number of customers:			
Ultimate consumers	435,874	449,760	3.2
Other gas utilities	946	1,029	8.8
Sales (thousands of cubic feet):			
To ultimate consumers	1,405,170,000	1,488,090,000	5.9
To other gas utilities for resale	5,703,622,000	6,185,980,000	8.5
Revenues:			
From sales to ultimate consumers	$ 306,585,836	$ 337,655,208	10.1
From sales to other gas utilities for resale	1,601,732,741	1,770,220,777	10.5
Other natural gas revenues	106,396,263	121,135,545	13.9
Total gas operating revenues	2,014,714,840	2,229,011,530	10.6
Gas operating revenue deductions:			
Production expenses—purchased gas	972,779,783	1,135,562,731	16.7
Other	53,218,179	39,192,096	(26.4)
Storage expenses	8,152,599	9,182,630	12.6
Transmission expenses	152,924,826	172,499,841	12.8
Distribution expenses	10,799,813	11,858,043	9.8
Custr. acctg., coll. & sales promotion expenses	6,363,833	6,903,161	3.5
Administrative and general expenses	77,848,905	90,609,235	16.4
Total expenses	1,282,087,938	1,465,807,737	14.3
Depreciation, depletion, and amortization	178,742,863	198,801,858	11.2
Taxes:			
Federal income	155,107,088	133,838,102	(13.7)
Other federal	2,620,586	2,917,187	11.3
State and local	60,588,299	68,020,196	12.3
Provision for deferred fed. inc. taxes	12,815,782	24,575,684	91.8
Credits to operations arising from federal income taxes deferred in prior years—credit	77,000	262,000	...
Total operating revenue deductions	1,691,885,556	1,893,698,764	11.9
Net gas operating revenues	322,829,284	335,312,766	3.9
Income from gas plant leased to others	1,692,489	1,733,591	2.4
Gas utility operating income	324,521,773	337,046,357	3.9
Other income	15,403,065	18,498,530	20.1
Gross income	339,924,838	355,544,887	4.6
Income deductions:			
Interest on long-term debt	99,713,256	118,487,237	18.8
Amort. of debt disc., premium & expenses	871,871	1,296,059	48.7
Interest charged to construction—credit	9,321,186	11,969,889	28.4
Other income deductions	12,186,726	15,809,839	29.7
Total income deductions	103,450,667	123,623,246	19.5
Net income	236,474,171	231,921,641	(1.9)
Salaries and wages charged to gas operations	144,704,269	161,515,350	11.6
Purchased gas—thousands of cubic feet	6,830,050,000	7,510,844,000	10.0
Gas utility plant (1)	5,834,878,497	6,850,472,194	17.4
Reserve for depreciation and amortization	1,200,027,706	1,386,629,195	15.5
Net gas utility plant	4,634,850,791	5,463,842,999	17.9

(1) Includes construction work in progress, 1956, $258,027,482; 1957, $409,666,381.
Source, Federal Power Commission.

during the four months September-December, according to an estimate by the Irving Trust Company, bringing the year's total close to $1,300 million. This would be about 44 per cent in excess of last year's financing.

Sixty Per Cent Gain in Use Of Gas Forecast by 1966

THE Chase Manhattan Bank in New York recently issued an interesting 28-page study on the "Future Growth of the Natural Gas Industry" by Lyon F. Terry, vice president, and John G. Winger, petroleum economist. Natural gas is now served to all but one per cent of gas consumers, hence the adequacy of the future supply is a vital question, the brochure points out. While oil and gas are joint products and are usually discovered by common exploratory efforts, nevertheless they become competitive fuels once they are produced. Hence, it is necessary to consider the oil and gas industries' close relations to each other.

The authors have undertaken to make some projections over the coming decade. Population is expected to increase from 168 million in 1956 to 197 million in 1966, an increase of 18 per cent, or an average annual increment of 1.6 per cent. Economic activity will proceed somewhat faster than this. Energy consumption in the postwar decade expanded at an average rate of 3.3 per cent a year. However, conversion from steam locomotives to diesels has greatly reduced the rate of increase, since last year the railroads accounted for only 2 per cent of national energy consumption compared with 12 per cent a decade before. After adjusting for the rail component, the use of energy increased 4.3 per cent per annum. On this basis a gain in used energy of 3.8 per cent a year in the next decade is forecast. Sources of energy are expected to increase as follows:

	Quadrillion Btu			*Change 1966*
	1946	*1956*	*1966*	*From 1956*
Natural Gas ...	4.1	9.9	15.6	+57.6%
Coal	14.5	12.0	13.8	+15.0
Water Power ..	1.4	1.8	1.8	0.0
Petroleum	10.5	18.4	30.1	+63.6
Total Energy.	30.5	42.1	61.3	+45.6

USE of oil and gas taken together has increased at an average rate of 6 per cent a year since 1920 and at 7 per cent in the past decade, while water power increased only moderately and coal declined. The spectacular gain in oil and gas in the postwar decade was substantially due to the displacement of coal, but this factor will be less important in the next decade. It appears likely that in the second half of the next decade conversion from oil to gas for space heating will be much less of a factor, and hence use of oil will grow faster than sales of gas. Continued gains in the use of gas seem likely to be more nearly in line with the expansion rate for overall energy. The marketed production of natural gas has grown at an average rate of 7.2 per cent per annum since 1920 and at 9.5 per cent in the postwar period, but in the coming decade a rate of growth of only 4.7 per cent is forecast by the bank.

Will reserves take care of this rate of growth? At the end of last year they were estimated at 238 trillion cubic feet, equivalent to 22 times 1956 use of gas. Both the Federal Power Commission and the banking fraternity usually require a twenty years' supply for a new project. It will be necessary to continue exploration for additional reserves in order to take care of the rate of growth in usage. For the last ten years additions to reserves have averaged about twice the amount of gas withdrawn by production, and for the year 1956 the figure was 2.3. In this respect the gas industry has made a more favorable record than the oil industry, which has only about

half as many domestic reserves in relation to consumption. On a Btu basis reserves of gas exceed those of oil by 40 per cent although consumption of gas is 45 per cent less that of oil.

THE growth rate forecast for natural gas over the next decade will require the addition of 230 trillion cubic feet to the reserve, or practically double the present amount, in order to maintain the 20-for-1 ratio. This would mean a ratio of only 1.65 cubic feet of new gas for each cubic foot used, and the bank thinks that this requirement can be met without great difficulty.

However, the new gas supplies cannot be obtained except at increasing cost. The industry in 1956 drilled 58,000 wells for oil and gas and the rate of drilling should increase to about 87,000 a year by 1966, requiring completion of about 735,000 wells in the next decade. Wells must be drilled to greater depths, and substantial offshore drilling is expected to continue. In the case of oil the amount of exploration and drilling has increased about 130 per cent in the past eight years for each unit of oil added to reserves, and with deep drilling the cost has increased still faster.

The bank estimates that it is necessary to drill nearly twice as many feet now as in 1947 in order to produce the same number of million cubic feet of natural gas. A careful study of over 20,000 wildcat wells drilled in 1944-49 shows that only about one in ten wells was really successful, and only one in 42 revealed an oil field with as much as 1 million barrels of recoverable reserve. The bank states:

> In the oil business increasing costs are forcing many producers, large and small, to foreign fields for cheaper sources of supply—to Venezuela, the Middle East, and the Far East. Gas producers who supply domestic markets are limited. They can go no farther than Canada and Mexico. On the other hand, they have no Suez problem.

IN 1950 proven gas reserves were 180 trillion, and this has now increased to 238 trillion while annual output has increased from 6.2 to 10.8 trillion. A favorable factor for the future is the fact that the rate of gas discovery compared with that for oil has risen substantially. It seems likely that an increase in the proportion of gas to oil will be found at greater depths since there is a greater degree of natural refining in deep wells because of high pressures and temperatures. Moreover, with the very great pressure, a cubic foot of space several miles down may contain about twice as much gas as one nearer the surface. With deeper drilling, the amount of gas per barrel of oil reserves has already risen more than 50 per cent in recent years.

Messrs. Terry and Winger conclude that, based on their estimate of 250 billion barrels of minimum ultimate oil recovery and deducting 86 billion discovered to date, there would remain 164 billion barrels of oil to be found in the future. With a ratio of 6,000 cubic feet of gas to one barrel of oil, this would indicate future gas discoveries of 984 trillion cubic feet. Adding the present reserve of 238 trillion indicates a maximum future gas supply of about 1,200 trillion cubic feet.

Based on this assumption, they project an increase in marketed production or net withdrawals to about 20 trillion cubic feet by 1980-90 (nearly double the present rate), and a gradual decline after that year extending to the year 2100, at which time less than one-half trillion cubic feet per annum would be used. Thus the gas industry should enjoy several decades of continued growth.

What Others Think

Production and Processing of Natural Gas For the Market

MOST of the gas which El Paso Natural Gas Company delivers to market or utilizes in its system operations is "casinghead" gas or "residue" gas, a by-product of the production of oil. As used in this article, "casinghead" gas refers to gas at the wellhead produced in conjunction with oil; "residue" gas refers to "casinghead" gas which has been gathered to a central point and processed for the removal of liquid hydrocarbons.

For many years in the Permian basin in west Texas and southeastern New Mexico it was the practice to burn this gas in huge flares at the field. In an oil economy, it was necessary to produce oil and when oil comes out of the ground the gas comes too. Only a small part of the gas thus produced could be used because there was no way to get it to market; the fields glowed brightly at night in the eerie orange light of the hundreds and hundreds of flares.

Then, beginning in 1940 and especially since 1947 when El Paso Natural Gas Company began deliveries of gas to California, the company has taken more and more of this previously wasted product into its pipelines and directed it to useful purposes. In 1956, the company took 467 billion cubic feet of "residue" gas into its pipelines. This volume of gas is equivalent, in fuel value, to 78 million barrels of fuel oil, an obviously significant contribution to the conservation of natural resources.

GEARING operations of the company to use this residue gas takes quite a bit of doing. Practically all of this residue gas is delivered to the company at low pressures, 40 pounds or 20 or even as low as four pounds. Thus, it is necessary to maintain field compressor stations throughout the Permian basin to compress this gas from these low pressures to the much higher pressures (usually 550 pounds) which are necessary for economical processing.

The quantities of residue gas which are delivered to the company are subject to wide variations from hour to hour, day to day, and month to month. In both Texas and New Mexico, oil production is governed by "allowables" established by state regulatory agencies. Every well, when completed, is given a daily rating which represents the volume of oil that experts feel will give the greatest and most effective yield during the life of the well. This rating will be, say, 150 barrels per day or 25 or 40 or some other volume. Then, at the beginning of each month, the total number of days' production that will be permitted is established. The number of

days of production is determined by the needs for oil and is established to prevent the overproduction, accumulation, and waste of this precious liquid above the ground.

As a result of this method of governing production, many wells achieve their allowables before the end of the month and are shut-in. In some months, practically all wells are shut-in. When oil production is stopped, the production of residue gas is also stopped and the company must draw on "dry" gas wells or "formation" gas wells as they are called—wells which are predominantly gas wells and yield liquid hydrocarbons only as a by-product of the gas operations.

OR, again, a large gasoline plant processing natural gas to remove from it butanes, propane, and natural gasoline and delivering the natural gas (multiple hundreds of millions of cubic feet per day at a single plant) to a plant of El Paso Natural Gas Company may shut down without notice to the company. This can be because of a mechanical breakdown at the plant, a holiday, or for some other reason. There are forty-seven locations in the Permian basin at which large volumes of residue gas are delivered to the company, most of these being gasoline plants of other companies, principally oil companies. Thus, throughout the day, there are constantly varying rates of delivery at many points. The changes in rates of delivery are usually made without any prior notice to the company.

In order to keep constant control of gas supply, the company has a field dispatching staff on duty twenty-four hours per day in its Permian division offices and its San Juan division offices. In the Permian division offices—through which the deliveries of residue gas are handled—there are a number of meters giving the pressure readings at all critical points. The pressures are telemetered from plants and pipelines scattered throughout an area that extends 375 miles from north to south and about 250 miles from east to west, roughly the same shape but somewhat larger than the state of Pennsylvania.

RADIATING outward from Jal, New Mexico (where the Permian division offices are located), are field trunk lines, much like the spokes of a great half-wheel. Near the hub of the half-wheel are a number of plants operated by El Paso Natural Gas Company which process gas from dry gas wells. When pressures begin to fall at a point along the field trunk lines, the dispatchers realize that residue gas deliveries are falling at the point. Instructions are radioed to gas switchers in the field to turn on certain dry gas wells. The plants of El Paso Natural Gas Company which process that dry gas are, of course, instructed to speed up operations. Then, when residue gas deliveries resume at the point in question, the switchers are told to turn certain wells off.

This story is quite a lot simpler in telling than in doing. Tied into El Paso Natural's system are the pipelines of other gas companies with which the company has "exchange" agreements in which volumes of gas belonging to one company at one point are traded for equivalent volumes of gas at another point belonging to another company. Production from every dry gas well must be adjusted not only to variations in residue gas production but must conform to contracts and proration regulations of state agencies.

Whereas the residue gas delivered to the company has usually been processed by another company for the removal of liquid hydrocarbons, the gas from dry gas wells is processed for such removal by the company itself. The gasoline plants of the

company, located in both the Permian basin and the San Juan basin (northwestern New Mexico and southwestern Colorado) now deliver in excess of 30,000 barrels of butanes, propane, and natural gasoline per day. To market these liquids efficiently, a subsidiary company, El Paso Natural Gas Products Company, has been formed. The Products Company is the principal owner of a butadiene plant near Odessa, Texas, which supplies this basic component of synthetic rubber to an adjacent plant of General Tire & Rubber Company and to United Carbon Company.

THE Products Company is also constructing a styrene plant at Odessa (styrene being another principal component of synthetic rubber), and is adding two gasoline refineries to the three which it already operates. The company markets motor fuels under the brand names "Dixie" and "El Paso."

Most of the natural gas which El Paso Natural Gas Company takes into its system is unusually "sour," containing high percentages of hydrogen sulphide and carbon dioxide. Also, of course, the gas has high quantities of water vapor. A major part of the company's activities are directed toward purifying and dehydrating natural gas.

The process used to purify and to dehydrate the gas is the glycol-amine process in which a treating solution of two chemicals is used, diethylene glycol to recover the water and monoethanolamine to remove the hydrogen sulphide and the carbon dioxide. In the process used, natural gas is introduced into the bottom of a large vessel, known as a contactor, which is from five to eight feet in diameter and about eighty feet in height. The natural gas moves up to the top of the vessel. At the top of the vessel, the glycol-amine solution is introduced and makes its way toward the bottom. At intervals throughout the contactor, the glycol-amine solution is held in a tray and the gas forced to bubble through it. Thus, the gas is becoming purer and purer as it goes toward the top and the glycol-amine solution is becoming more and more impure as it goes toward the bottom. At the top of the contactor, where the hydrogen sulphide, carbon dioxide, and water are the most minute and consequently most difficult to remove, the natural gas is exposed to the purest glycol-amine solution. The pure natural gas flows out of the top of the contactor and into transmission lines. The impure glycol-amine solution flows out of the bottom of the contactor and is circulated to a still where, as a result of heat and lessened pressure, the hydrogen sulphide, carbon dioxide, and the water vapor bubble out. The process is a continuous one—the glycol-amine solution constantly being circulated through the contactor, the still, and heat exchangers and the natural gas constantly being fed through the contactor.

UNFORTUNATELY, the acid content of the substances removed from natural gas have a highly corrosive effect. For many years engineers of El Paso Natural Gas Company have studied methods of fighting this corrosion. In some cases aluminum is used rather than steel; in other cases high-grade alloy and stainless steel are used instead of the usual grade of steel. In other cases, the high cost of using expensive alloys has led to the decision to continue to use regular grades of steel and, from time to time, to replace the tubes and walls of the vessels which handle the gas and the impurities removed from it.

In several plants, facilities have been installed to process the hydrogen sulphide

to extract the sulphur. In many others, the hydrogen sulphide is piped a significant distance from the plant and burned. In all cases, employees of the company exercise great caution because hydrogen sulphide, in similar concentrations, is more poisonous than cyanide. Further, it tends to paralyze the olfactory nerves. A few whiffs of the stuff and a person can no longer smell it. This means that hydrogen sulphide can become quite strong in concentration without people noticing the increasing odor. To prevent accidents, blowers are installed in various treating plants of the company to carry away any concentrations of hydrogen sulphide that might occur. Near the flares which burn this hydrogen sulphide, employees wear oxygen masks and have a second person stand guard and watch a safe distance away.

ALTHOUGH it is usually the custom to compress natural gas to about 550 pounds before treating it, at several locations the company treats the gas at low pressure. At one plant about 13 per cent of the natural gas, as it arrives at the plant, is carbon dioxide and water vapor. To compress this gas before treating it would, obviously, result in a 13 per cent increase in compressor expense. It is more economical, therefore, to treat this gas at low pressure to remove the bulk of the impurities, to compress it, and to treat it a second time.

Through studies of pipeline efficiency, the company's engineers soon learned that glycol-amine solution was becoming entrained in natural gas. Deposits of this solution began to build up in the pipelines downstream from treating plants. Even a slight film of this solution reduces the efficiency of the pipeline tremendously. Therefore, the company has installed a number of treating solution recovery units through which natural gas is passed before it goes into the main lines. These units, which use bauxite principally as the absorbing medium, have proved very effective.

The development of effective and economical purification and dehydration processes has been of immense benefit in the utilization of natural gas reserves. Today, natural gas leaves a purification plant in a purer state than gas which was once considered "sweet" prior to the development of modern purification processes.

THE absolute removal of water and water vapor also presents a major improvement over older processes. At one time—before and during the Second World War—the traces of water vapor left in gas by older dehydration processes accumulated at points along the pipeline. In cold weather, this water vapor would begin to freeze; the ice would attract more water and water vapor from the gas until an ice plug built up. Transmission crews would have to dig up the pipeline at the points these plugs built up and build fires around the pipelines to "thaw" out the ice. The best fuel was old automobile tires. Old-timers around the company reminisce frequently of the hundreds and hundreds of tires that were burned in a winter to keep the lines thawed out. What an impossible task this would be today with daily deliveries in the three billion cubic foot range and with load factors in excess of 90 per cent!

El Paso Natural Gas Company has been under constant pressure to develop new gas reserves. This pressure is great because of the tremendous population and industrial growth of the area which it serves and the constantly increasing demands for gas. The pressure is made even greater by the fact that the company must have dry gas reserves available in large quantities to utilize effectively the

great volumes of residue gas produced in in the Permian basin.

Two processes of recent years have been particularly fruitful in the efficient development of gas reserves. One of these is the use of gas or compressed air as a circulating medium in drilling. The other is the use of fracing to maximize the flow of gas from newly drilled wells.

For many years, "mud"—a highly specialized mixture of water and drilling mud and other substances when desired by the driller—was used exclusively to bring up the cuttings and debris from the drill bit. The mud is pumped down through the drill pipe, through the bit at the bottom, and returns to the surface between the drill pipe and the earth, carrying with it the ground rock from the action of the drill bit.

In highly porous formations, this drilling mud would "seal" off the flow of gas, stopping it altogether or holding it to a minimum. When natural gas or compressed air is used rather than mud, the flow of gas through porous producing formation is left unhampered. Naturally, mud and gas cannot be used as the circulating medium in every location. But where they are used, well performance is much improved.

"Fracing" has proved to be a tremendous boon to achieving maximum production from a formation. The problem, once a pay zone was drilled, has always been to get gas (or oil) to flow through the stone to the well bore. Since, under modern drilling practices, a single well must drain a formation for hundreds of feet in all directions, the treating of gas-bearing rock to achieve maximum flow through it has become extremely important.

For many years, it was the practice to pour acid into a limestone formation and to shoot (explode nitroglycerin in) a sandstone formation. This shooting a well "messed up the hole" as the roughnecks say, and led to a recovery of gas that was better than no treating at all.

Personnel of El Paso Natural Gas Company developed procedure by which water rather than oil is used for fracing the pay zone. The use of fracing today—whether oil or water is the medium—has resulted in substantial improvement in the flow of gas from a field.

Although both drilling with gas and fracing might properly be considered drilling techniques, they are mentioned in this discussion of production and processing because they are major steps in providing gas service to consumers. The use of these two techniques has added substantially to the amount of gas which will be recovered from known fields. The amount of additional gas, which will eventually be delivered to consumers because of their use, is as significant as if the same volume of gas had been discovered in new fields.

All in all, the production and processing of natural gas represents today the use of the most modern techniques and equipment to get more gas and to make that gas more usable. Without the improved techniques, without the improved purification and dehydration processes, without the microwave communications to co-ordinate plants, El Paso Natural Gas Company could not supply the large volumes of gas which are needed by the people in the states which it serves. Certainly the improved technology of the gas industry in the production and processing of gas is one more illustration that the industry is modern, forward looking, and progressive.

—B. Marshall Willis

The March of Events

AGA President Nominated

THE American Gas Association last month announced the nomination of Robert W. Otto, chairman of the board, Laclede Gas Company, St. Louis, Missouri, as president of the association to succeed C. H. Zachry, president of Southern Union Gas Company, Dallas, Texas. The election was scheduled during the thirty-ninth annual AGA convention held October 7th to 9th in St. Louis.

A. W. Conover, president of Equitable Gas Company, Pittsburgh, originally was slated for the presidency but, because of illness, is unable to fill the office at this time. He has been nominated for the position of first vice president. Mr. Otto had been chosen earlier as the candidate for first vice president.

Mr. Otto, former attorney general of the state of Missouri and former member of the supreme court of Missouri, joined Laclede in 1932 as general counsel. In 1942, he was made a vice president and a member of the board of directors. He became president of Laclede in 1947 and chairman of the board in 1956.

Preconference Announcement

ON Thursday and Friday, November 14th and 15th, the Federal Bar Association, in co-operation with The Bureau of National Affairs, Inc., will conduct a briefing conference at the Hotel Mark Hopkins in San Francisco, California, on the subject of water resources.

Program participants will be members and staff of the Federal Power Commission, officials of the Departments of the Interior, Agriculture, and Health, Education, and Welfare, employees and officers of the U. S. Army Corps of Engineers, members and staff of pertinent congressional committees, and representatives of private interests.

The purpose of the conference is to afford businessmen and their legal advisers an opportunity to receive direct explanation of new government policies and programs and legislative proposals. At the same time, the agencies concerned will benefit greatly by a closer acquaintance with the problems of the business community. Subject matter to be discussed will cover comprehensive planning for water resources; pollution, including desalinization and saline control; power, nonconsumptive *versus* consumptive, including industrial uses; flood control, including irrigation and navigation; U. S.-Canada relations; and watershed protection.

Reservations (fees, $50 per person or $40 for members of the Federal Bar Association) covering the sessions and luncheon both days are being taken by the Briefing Conference Secretary, 1231 24th street, N. W., Washington 7, D. C.

Alabama

Gas Franchise Renewal OK'd

THE city council of Fairfield voted recently to renew the Alabama Gas Corporation's franchise for another thirty years. The present franchise does not expire until 1959. But by renewing the franchise now, Fairfield gets the immediate benefit of an additional one per cent of the total the company grosses.

The city now is drawing the 3 per cent required by state law. The additional revenue will amount to about $5,300 per year.

Gets FPC Permit to Build Dam

THE Federal Power Commission recently issued a 50-year license to Alabama Power Company, Birmingham, for a proposed $37 million hydroelectric project on the Black Warrior river in Alabama.

The FPC said Alabama Power will construct a high earth and rock fill dam at the proposed Lewis Smith dam development, located at the upper New Hope dam site on the Sipsey Fork of the Black Warrior river.

The dam will create a reservoir with a usable power storage of 400,000 acre-feet. The proposed power plant will have an initial installation of 80,000 kilowatts and provision has been made for another similar unit.

California

Gas Rate Increase Granted

AN increase in gas rates which will raise bills 9.3 per cent for residential and commercial customers of the Southern Counties Gas Company was authorized last month by the state public utilities commission.

The new rates, effective on or after October 15th, will yield additional gross revenue of $6.5 million for the company, enabling it to meet operating expenses and earn a fair return of 6.5 per cent on its investment, the commission said.

The commission's decision followed thirteen days of public hearings on the company's request for a 10.4 per cent rate boost to yield $7,112,000 more revenue. The company said it was needed to offset higher wages, property taxes, increased cost of gas, and other items.

In arriving at its decision, the commission adopted its staff experts' estimate of the company's rate base, which was nearly $7 million lower than the company's estimate.

Colorado

Rate Increase Application Filed

COLORADO INTERSTATE GAS COMPANY recently announced the filing with the Federal Power Commission of a natural gas rate increase application amounting to $2,553,300. Effective date of the new rates sought by the company is February 5, 1958, the same date on which increased rates of Pacific Northwest Pipeline Corporation become effective.

The new rate filing by Colorado Interstate Gas was occasioned by an increase sought by Pacific Northwest Pipeline Corporation which supplies Interstate with a portion of its purchased gas supply. Pacific Northwest last August filed for a $5.5 million increase which has been suspended by the FPC for the usual five-month period.

Of the amount sought by Colorado In-

terstate in its application, $1,817,460 is applicable to the Rocky Mountain area. The remaining $735,840 will be borne by Natural Gas Pipeline Company of America which purchases gas from Interstate for its midwestern market areas.

Connecticut

Telephone Rate Boost Denied

THE state public utilities commission recently denied the Southern New England Telephone Company a rate boost of $9,490,000 a year above its estimated level of business for 1957. Instead, the commission invited the company to file a revised rate schedule that would provide $7,490,000, or $2 million less than the Southern New England Company request.

The company asked for increases ranging from 10 to 12 per cent in resident and flat business exchange rates, some exchange reclassifications, increases in individual line message business service and semipublic service, an increase of 25 cents a month for residence and business extension stations, and various other increases.

Iowa

May Base Rates on Current Property Value

IN the first major Iowa supreme court utility rate decision since 1909, that court ruled last month that a utility has the right to take into consideration the present value of its properties in setting gas rates. The decision was on an appeal by both the Iowa-Illinois Gas & Electric Company and the city of Fort Dodge, Iowa, from a ruling two years ago by District Judge Harvey Uhlenhopp.

Iowa-Illinois had sought permission to raise rates for natural gas, a move which was in conflict with Fort Dodge's gas rate ordinance. The city council had refused to grant a gas rate increase, after which the utility got a court order to keep the city from enforcing its rate ordinance, and started collecting higher rates.

The state supreme court affirmed a decision by Judge Uhlenhopp in which he said gas rates should be based on "fair value," considering the original cost of a utility's properties along with present value, less depreciation.

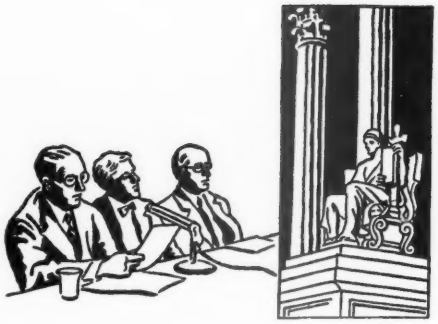
New York

Tariff Amendment Accepted

THE state public service commission recently accepted a tariff amendment filed by Long Island Lighting Company, effective October 1st, designed to revise rules under which charges are made for installation of lateral pipe connections to properties of future customers. The company provides gas service in Nassau and Suffolk counties and in part of Queens.

Under its existing rules, the company installs, without cost to the consumer, the first 50 feet of service lateral beyond the highway limit, with the customer paying the cost of any installation in excess of 50 feet. Certain other charges are made for work performed when the ground is frozen and for relaying sod, sidewalks, or other paved surfaces removed during the installation work.

Under its new tariff, the company will continue provisions of its present tariff in effect for new residential customers who will use both an automatic water heater and also another gas appliance whose hourly input rating is not less than 15,000 Btu or who will use gas exclusively for space-heating purposes.



Progress of Regulation

Trends and Topics

Expense of Adjusting Customers' Appliances When Heating Value of Gas Is Changed

A CHANGE in the heating value of gas, as an incident to a change-over from manufactured gas to natural gas or the introduction of a different mixture, necessitates adjustments in customers' appliances. A description of the performance of a given gas appliance and the problems involved in heating value changes were discussed by the New Jersey commission when it considered complaints by customers against practices of the New Jersey Natural Gas Company (100 PUR NS 97).

A recent decision by the Wyoming commission, in a rate proceeding involving the Cheyenne Light, Fuel and Power Company, deals with one phase of this subject. The commission ruled that the expense incurred in adjusting customers' appliances was reasonably amortized over a 5-year period. The natural gas, of a higher heating value, furnished to customers resulted in a benefit to them in that it reduced the amount of gas to be purchased in order to secure the same heating value as formerly (19 PUR3d 214).

Company Responsibility

Gas companies assume responsibility for adjustments as part of the change-over program. The Tennessee commission, in authorizing the substitution of natural gas for artificial gas, observed that it would be necessary for the company to make adjustments of customers' appliances so that the consumers could use efficiently and satisfactorily natural gas of a higher Btu content than the manufactured gas being used. The commission expressed the opinion, in accord with the policy of other commissions and gas companies, that the utility should make all the necessary adjustments without expense to any existing customer (29 PUR NS 118). The New York commission said that this cost is an operating expense to be borne by the company (86 PUR NS 126).

The expense of improvements not directly related to the change-over must be borne by the customer. An illustration of this precept is found in a New York case where the commission ruled that a gas utility, converting customers' ap-

pliances from artificial to natural gas, is not required to bear the cost of installing safety devices on "Sav-U-Time" water heaters—a device for remote control, with a pilot light which may go out. The danger of explosion when the pilot light is out existed with the use of manufactured gas as it existed with natural gas. Conversion to natural gas had nothing to do with the safety or lack of safety of the "Sav-U-Time" (93 PUR NS 76).

Amortization of Change-over Expense

Expense incurred in adjusting appliances is recognized as a proper operating expense, and commissions permit amortization of this expense, as did the Wyoming commission in the Cheyenne case mentioned. The Missouri commission expressed the opinion that costs incurred in converting from manufactured to straight natural gas are not properly chargeable to capital account, but should be amortized over a period of years by charges to expense (Re Laclede Gas Light Co. Case No. 11,618, September 26, 1949). The Missouri supreme court had ruled that the cost of changing customers' appliances when natural gas is introduced for mixing purposes may be charged to operating expenses and amortized where necessary, if this has not already been done (22 PUR NS 6).

Differences in the amortization period are, however, noted in reported decisions. The Pennsylvania commission, like the Wyoming commission, approved a 5-year period (16 PUR NS 65). But a 10-year period has been approved by the commission in Wisconsin (92 PUR NS 133) and by the commission (83 PUR NS 4) and a court (89 PUR NS 177) in the District of Columbia.

Amortization periods naturally vary with varying circumstances. In the New York & Richmond Gas Company case it was said that the period of amortization of the expense of changing over from manufactured to natural gas service should not exceed the life of securities issued to finance the change-over, and the period should be at least three years (80 PUR NS 63). In a case involving the Niagara Mohawk Power Corporation a period of ten years was approved in 1953 by the New York commission (100 PUR NS 95), although in 1950 a 5-year period had been approved when substitution of natural gas was authorized in a different service area (86 PUR NS 126).

Termination of Expense Amortization

The California commission had occasion to rule on the propriety of expense allowances for cut-over costs which had been recovered. It denied San Joaquin Light & Power Corporation such an allowance when a 3-year amortization period was substantially ended at the time of a rate proceeding (PUR1933E 128). Likewise, in fixing rates for the San Diego Consolidated Gas & Electric Company, the commission disallowed a claim for this expense on the ground that such an item of expense incurred in the past, like excessive earnings in the past, should not be equalized in future years. Costs incident to the change-over had not resulted in an excessive burden on revenues, but the company had earned more than a 7 per cent return (7 PUR NS 443).

In the Pacific Gas and Electric Company case, which went to the Supreme Court on the question of reproduction cost evidence (21 PUR NS 480), the

commission disallowed cut-over expenses on the assumption that net revenues would have been adequate if the expense had been charged as incurred (1 PUR NS 1). After the case was remanded by the Supreme Court, the district court said that this item, incurred in the years 1929 to 1932, had no place in an estimate of expenses to be deducted in 1934. The court declared:

"The company elected to pay the expense necessary to change over their customers' appliances. Such expense may properly be reflected in the going concern value of the company's business but not in its expenses for years subsequent to the year in which they were actually made." (26 PUR NS 1.)

Review of Current Cases

Allocation Method Required in Determination of Intrastate Rates of Interstate Gas Company

UNITED FUEL GAS COMPANY won from the West Virginia supreme court a reversal of a state commission order (10 PUR3d 31) granting a substantially smaller rate increase than the company had requested. The court ruled that the company, an integrated interstate system, was denied the right to recover from its West Virginia gas consumers the just and proper portion of its total cost of service. Upon review, the company did not challenge the commission's total valuation of its property.

Nor was there any suggestion by the commission that the service was in any wise inadequate.

United Fuel produces and purchases in West Virginia more than twice as much gas as it supplies to customers in the state from this source. At a somewhat higher cost, it purchases a much greater quantity of southwest gas. However, because of the way its facilities have been built up over the years in the service of both West Virginia consumers and customers outside the state, it is now uneconomical and impracticable for the company to supply West Virginia consumers with gas produced only in the state. To do so would necessitate expenditures so great as to result in a substantially higher cost of service than is presently experienced in using southwest gas to supply some of the intrastate requirements.

More than 85 per cent of the entire business of United Fuel consists of interstate sales to wholesale customers. It also serves consumers in Kentucky and Ohio. To meet fluctuations in demand, the company uses a number of underground storage pools located in West Virginia. It is thus enabled to take uniform deliveries of southwest gas which it stores for withdrawal and consumption during the winter months. Gas from West Virginia is stored in two of these pools but customers in the state receive gas from only one of the two. They are also supplied, however, from some of the other pools.

Gas Cost Differential

The commission had ruled that since the company has a supply of local gas adequate to meet its local demands, and does in fact use such gas as its principal supply for local demands, the rates charged customers in West Virginia should be based on the cost of local gas rather than

the cost of southwest gas or of the two commingled.

The court held that this view was not supported by the evidence. It was not contended that this situation was the result of any faulty management. To require the company to provide gas to West Virginia customers at the relatively low cost of gas produced within the state, where by reason of economy and practicality such customers must be supplied from higher-priced out-of-state purchases, would constitute confiscation to the extent of the loss thus sustained, the court said.

Allocation or Separation

The company contended that the proper portion of its production and transmission costs assignable to West Virginia business should be determined on the basis of the ratio between the total cost of the business operated by the entire system and the cost of the deliveries of all the gas furnished to West Virginia consumers during the test year.

It classified the total costs into demand costs and commodity costs.

The commission had rejected the allocation method and instead adopted a segregation or separations method. It considered only that portion of the property used in the service of West Virginia customers that was located in the state. The evidence showed, however, that large quantities of gas were in fact brought into West Virginia through the company's interstate facilities and supplied to West Virginia customers. It was also made clear that the company is an integrated system with facilities designed to serve all of its customers without regard to the location of the various areas of consumption.

There is no inflexible rule which requires the application in all cases of either the allocation method or the segregation method, the court stated. Which should be applied, depends on the facts. It was held that the allocation method should have been applied in this case. It should have been made in the proportion that the volume of gas used in West Virginia bore to the entire volume passing through the company's lines. The action of the commission in excluding from consideration the out-of-state facilities used in the service of West Virginia customers constituted confiscation since it deprived the company of the right to earn a reasonable return on the full fair value of its property devoted to intrastate service.

Peak Production Costs

The court indicated that the costs associated with a liquefied gas facility designed and maintained to meet peak and emergency capacity requirements, and not to produce annual volumes of gas, should have been assigned entirely to demand. The commission had allocated these costs equally between demand and commodity. The court also noted that an element of demand was associated with the production and purchase of southwest gas. The commission was directed to consider the proper percentages of the cost of service of the company's various operational functions to be assigned to demand and commodity.

The commission's use of a peak month rather than a peak day for the allocation of demand costs to consumers was error, the court ruled, in view of evidence which clearly indicated that the plant of the company and its method of operation were designed to meet peak-day requirements. *United Fuel Gas Co. v. West Virginia Pub. Service Commission, 99 SE2d 1.*

Upon remand of the case to the commission, rates in accordance with the court's determination were authorized. *Re United Fuel Gas Co. Case No. 4125, July 15, 1957.*

Immediately thereafter, filings of further increases by United Fuel were suspended by the commission in an order issued July 17, 1957, pending investigation. A moderate interim increase was authorized on the basis of increased cost of purchased gas. *Re United Fuel Gas Co. Case No. 4597, July 17, 1957.*

Commission Cannot Require Wholesale Service from Private Carrier Gas Company

NORTH CENTRAL GAS COMPANY is not a common carrier but a private carrier and is therefore not subject to the jurisdiction of the state commission, the Nebraska supreme court ruled. The city of Bayard, in a complaint before the commission, sought an order requiring the company to show cause why it should not be ordered to serve the city with natural gas, and at wholesale rates, in the event the city should acquire the company's natural gas distribution system in the municipal area. The commission sustained the complaint (16 PUR3d 462) and the company appealed.

Under state statutes, the commission has jurisdiction over common carriers but not over private carriers. The crucial question, therefore, was whether or not the company was a common carrier. The company maintained that it was not. The court observed that a common carrier is a person or company holding itself out to the public as offering its services to all persons similarly situated and performing as its public vocation the services of transporting passengers or property for a consideration or hire. On the other hand, a private carrier is one which, without making it a vocation, or holding itself out to the public as ready to act for all who desire its services, undertakes, by special agreement in a particular instance only, to transport property either gratuitously or for hire.

The company carries only gas purchased by it and sold at retail by delivery to ultimate consumers through its own distribution systems serving several municipalities. It has never sold gas at wholesale or to others for resale. Nor does it want to go into the wholesale business as the city wishes it to do.

Stand-by Service Contract

The company's supply comes from Nebraska fields although it has a reciprocal stand-by service contract with Kansas-Nebraska Natural Gas Company, Inc., which will enable either party to deliver gas to the other in an emergency. Contrary to the city's contention, said the court, this single contract does not make the company a common carrier of natural gas and require it to carry gas for anyone applying for service. It does not constitute a holding out to the public as a carrier of gas for a consideration or hire. The company is simply a private carrier undertaking by special agreement in particular instances to transport gas without being bound to serve every applicant for service. It merely supplies and sells its own gas to ultimate consumers at retail. It renders no transportation services for hire.

Eminent Domain Not Pertinent

A contention that the company was a common carrier because it had exercised the right of eminent domain under a state statute was rejected as being without merit. This statute declares to be a common carrier any company carrying gas intrastate for a consideration, and it

grants such companies the power of eminent domain. They are placed under the jurisdiction of the commission. The court pointed out that only companies transporting gas for a consideration are within this statute. It is therefore inapplicable to the company in the instant proceeding. Moreover, this company had exercised the power of eminent domain as an interstate pipeline, as distinguished from an intrastate pipeline, which it concededly had a right to do under another statute. *City of Bayard v. North Central Gas Co. 83 NW2d 861.*

Certificate Condition under Natural Gas Act Not to Be Nullified by Rate Filing

A CERTIFICATE condition imposed under § 7(e) of the Natural Gas Act, limiting allowable rate of return, cannot be collaterally nullified through the filing of a rate schedule change under § 4(d), the Federal Power Commission held in denying an application by Texas Eastern Penn-Jersey Transmission Corporation for rehearing on rejected rate filings.

A condition limiting rate of return to 6 per cent was imposed upon a certificate issued in 1954 authorizing the company to lease operating facilities to its parent company, Texas Eastern Transmission Corporation.

Penn-Jersey filed the lease agreement as a gas tariff. It never became effective as such, however, in view of the fact that a lease agreement is not required to be filed as a rate schedule. It does not alone constitute either a sales or transportation agreement. The company later attempted to file rate changes affecting the leased facilities so as to raise its return to 6¾ per cent.

Condition a Continuing Limitation

Penn-Jersey contended that it had satisfied the certificate condition by the mere filing of a tariff acceptable to the commission and that it was unlawfully deprived of a statutory right to file a change in its rates and to have a hearing. The commission disagreed. It observed that the condition specifying a 6 per cent rate of return imposed a continuing limitation upon the company's right to increase its charges to Texas Eastern. This limitation could be removed only by securing a modification of the condition.

The mere filing of a lease agreement allowing for a 6 per cent rate of return did not satisfy the continuing limitation, the commission said. Nor did Penn-Jersey have a statutory right to file a change in rates, for it does not alone, under the lease, either sell or transport natural gas in interstate commerce.

The company asked for a 6¾ per cent return on a net investment rate base, the same as that sought by Texas Eastern. As its reason for requesting the same rate of return as its parent, Penn-Jersey cited its dependence upon Texas Eastern for future financing.

The commission held that no justification had been shown for the increase but thought it appropriate to permit the company to show in a proper proceeding whether it was entitled to an increase. The commission indicated that the rate filing, though rejected as such, could be retained as an application to amend the certificate order and could be consolidated for hearing along with the parent company's proceeding. *Re Texas Eastern Transmission Corp. et al. Docket Nos. G-2340, G-2341, August 7, 1957.*

Telephone Rates Reduced Because of Poor Service

FOLLOWING numerous complaints and largely unheeded orders to improve service, the Georgia commission substantially reduced the rates of Farmers Telephone Company so as to make them commensurate with the poor quality of service provided. The plant is obsolete and inadequate.

The rate reduction will apply for a 60-day period, after which the original rates will be restored if service has sufficiently improved.

A further reduction may be ordered, however, if conditions at the end of the period warrant lower rates. The commission ordered the company to take immediate steps to rehabilitate the entire plant, including all necessary replacements and repairs to outside facilities, as well as the installation of telephones and central office equipment. Regular reports were required.

Shortly before this decision a dial switchboard was installed and dial installations were commenced. However, outside plant facilities were so inadequate that serious service difficulties remained. In these circumstances, rates should be made commensurate with the character of the service, the commission ruled. *Re Parker (Farmers Teleph. Co), File No. 19405, Docket No. 1165-U, July 25, 1957.*

Telephone Company Authorized to Enter Area Inadequately Served by Mutual Company

THE Missouri commission authorized the General Telephone Company of Missouri to construct facilities and provide service through its Columbia exchange in the unincorporated area of Ashland, although this territory was being served by a mutual company. Existing service was shown to be poor, and the equipment in use was entirely inadequate. More than half of the subscribers, along with a substantial number of nonsubscribers, requested that General Telephone be certificated in the area. This company indicated a willingness to expand its system to include Ashland.

The officers of the mutual company contended that if General Telephone were permitted to enter the area, there would not be enough subscribers of the mutual exchange remaining to provide funds necessary to rehabilitate the exchange and continue its operation. Rates for service through the Columbia exchange system would be much higher than the mutual company's switching charge of $1.25. It appeared, however, that the great majority of interested people in the Ashland area preferred the Columbia exchange service.

Commission Jurisdiction

The members of the mutual association had voted to ask General Telephone to serve their area, but the officers of the association did not act in accordance with the vote. A minority of the subscribers joined the officers in objecting to the proposed new service. Observing that it has no jurisdiction over the mutual company, its service, or rates, the commission claimed no power or desire to look into this situation except to the extent necessary to secure information as to the wishes of the majority of the public in the area. A mutual company is not subject to the commission's authority to see that the public is properly served, and the commission has no power to require it to improve

service. However, each subscriber or member of the association in the instant case, together with any other resident of the mutual exchange area, was free to seek service from another source.

Under the evidence showing that General Telephone was willing and able to provide adequate service in the Ashland area, the commission concluded that this company should be granted a certificate. *Re Smith, Case No. 13,641, August 19, 1957.*

Electric Rate Increase Allocated to Achieve Uniformity

THE Niagara Mohawk Power Corporation was authorized by the New York commission to increase electric rates throughout its entire territory. The new rates were estimated to produce $8,225,000 more than the company's revenues under its existing rates and billing practices. This was $1.7 million less than the estimated increase under the rates originally filed by the company.

The increase would not affect all customers uniformly. The bulk of the increase would be borne by residential and commercial users in western New York. In the eastern and central parts of the state, for most residential customers there would be an increase of 10 cents a month. The commission pointed out that existing residential rates in the western division have been substantially lower than those in the eastern and central territories for many years. The new tariffs would make the residential rates more nearly uniform throughout the company's entire system.

The commission said that while the tariff filings, as modified, might be improved upon, it was faced with a practical situation where the evidence disclosed that the company was in need of additional revenue without undue delay. In fact the company had already requested the commission to permit it to establish temporary rates if the case were to be continued. *Re Niagara Mohawk Power Corp. Cases 18171, 18321, August 27, 1957.*

Extension Rules Govern Construction of New Line Needed in Conversion to Dial Service

THE Missouri commission refused to require United Telephone Company to construct at its own cost a 12-mile line to serve approximately ten customers. Under the company's extension rules, customers are required to contribute to the cost of lines which are extended more than one-half mile per customer.

When the company converted to dial service under a franchise requirement, service over switcher lines had to be discontinued until they could be made metallic and available for conversion to dial. The ten customers owned the switcher line over which they were being served, but they apparently did not care to convert the line at their own expense even though the company offered free supervisory help and materials at invoice cost. They urged that the company be required to construct a line for dial service entirely at its expense, notwithstanding the extension rules.

Discrimination Avoided

The commission ruled that these former

customers must choose between building a line and securing facilities which will entitle them to switcher service at switcher rates or make arrangements with the company for dial service whereby it will build a line and provide facilities under its extension rules. To depart from the rules and require the company to pay all the costs for building the line would result in unreasonable discrimination. It would increase the rates of all customers in order to construct a line to serve a small group. The commission recognized the necessity of a rule which fairly prescribes the conditions under which service may be had by a small group of persons located at some distance from an exchange without requiring other customers to subsidize the service.

A contention that United was responsible for the position in which these few customers found themselves was rejected. The franchise was granted on condition that the company convert its system to dial operation. The company was therefore forced to make the conversion, which of necessity resulted in discontinuance of service over the switcher line. *Carroll et al. v. United Teleph. Co. of Missouri, Case No. 13,640, August 12, 1957.*

General Service Customers Rather Than Special Service Customers Absorb Natural Gas Rate Increase

THE New Mexico commission approved a proposed rate increase for natural gas service to domestic and commercial customers. The company did not seek an increase for the various specialized types of service furnished under separate schedules. The new rates were calculated to yield a return of 4.88 per cent.

In addition to general commercial and domestic service the company furnishes industrial service, gas engine pumping service applicable to gas used in internal combustion engines for power pumping purposes, gas for drilling purposes, gas lift service, and field camp service applicable to natural gas used in camps of oil companies. Consequently, the commission said, the company's entire operation is considerably different from the usual operation of the retail distribution company.

Burden of Rate Increase

The commission considered whether it was proper for the company to obtain the entire revenue increase from its general service customers alone, particularly since the company presented no specific analysis of the proper allocation of cost of service among its several classes of customers. However, the record did contain some evidence warranting the conclusion that the relief sought by the comany was justified.

The record was clear, for example, that the company had no significant investment in plant and facilities required to render the various special types of service. On service to the field camps, the company provides a service regulator and a meter. On drilling gas service it has no investment. On gas engine pumping service the company has some plant investment related to service to two cotton gins served from one of its systems, but, otherwise, it has no significant investment. On lift gas service, the company has no investment in plant.

Cost of Special Service

The record also indicated that the company's operating expenses related to the special types of service were less than those related to general service customers. Fur-

thermore, the time required to be devoted to those special types of service was considerably less than that required to operate, maintain, service, and bill general service customers. The commission also considered the fact that the very nature of the special services in the gas production area causes such types of service to be unusually responsive to any change in rate. This is particularly true as to field camp, lift gas, and drilling gas customers. Furthermore, there was no indication that the existing rates for these special types of service were inadequate. Rather, the record tended to support a conclusion that the existing rates were reasonable and lawful. *Re Jal Gas Co. (Inc.) Case No. 499, August 28, 1957.*

Mandamus to Compel Connection Denied Gas Well Owners

THE Oklahoma supreme court reversed a lower court judgment which had issued a peremptory writ of mandamus compelling a natural gas company to connect its transmission line with certain gas wells and to purchase and take gas from such wells. Where the corporation commission had exclusive jurisdiction to determine price and specify terms or conditions of delivery of gas under a statute requiring a gas company operating transmission lines to connect such lines to gas wells in the vicinity, pointed out the court, the owners of the gas wells had a plain and adequate remedy in the form of a statutory proceeding before the commission. The writ of mandamus would not be issued where there was a plain and adequate remedy in the ordinary course of the law.

The court pointed out that it was the adequacy of the statutory remedy which would prevent mandamus and not the mere existence thereof. If the statutory remedy was not adequate to enforce or protect the rights of the plantiff, it would not prevent the issuance of mandamus. However, in this proceeding, the statutory remedy was adequate. *Oklahoma Nat. Gas Co. v. White Eagle Oil Co. 312 P2d 879.*

Rates Reduced after Rulings on Return, Rate Base Requirement, and Construction Work

THE Florida commission, upon investigating the rates of Florida Power & Light Company and finding them excessive, ordered a reduction to a level which will afford a rate of return of 6.98 per cent. The company had been earning a return of 7.72 per cent based on the rate base found by the commission staff. The difference in net operating income amounted to approximately $2,234,000.

The company insisted that it required a return in excess of 7 per cent on total capitalization in order to attract capital for its large expansion program. In this calculation it used total capital outstanding at the end of the test year. The commission felt, however, that the proper way to ascertain earnings on capital would be to use the average capital outstanding during the year rather than year-end balances. For a test year, only the outstanding capital is at work, it was noted, and upon that dividends are paid and the company's cost of money is calculated. On this basis, the company's earnings were 8.17 per cent. The earnings on common equity were 15.78 per cent.

The staff's investigation showed that

131 electric utilities in the United States for 1956 earned 5.80 per cent on total capital and an average of 10.56 per cent on common equity capital. Besides noting the tight money situation, the commission recognized that Florida utilities were experiencing far greater growth than utilities in other states. But even so, it was unable to accept so great a disparity in earnings. Rather than undergo a conventional adversary proceeding, the company elected to acquiesce in rate reductions recommended by the staff.

Rate Base Required

Claiming at least a 7 per cent return on total capitalization, Florida Power urged that it was unnecessary for the commission to determine a rate base and rate of return in this case. However, the company did submit rate base figures. The commission ruled that it must, as a matter of law, determine a rate base and a rate of return when fixing rates, even though the utility elects to acquiesce in recommended reductions in existing rates. Otherwise the fixing of rates would be arbitrary. Nor could the commission, under its statutory authority, use total capitalization as a rate base upon which to base a reasonable return. The utility, its investors, the rate-paying public, and the reviewing court, if any, must be advised concerning the method employed in arriving at reasonable rates.

Storm Damage Reserve

The storm damage reserve maintained by the company, amounting to nearly $7 million, was excluded from the rate base. This reserve will be used in financing anticipated construction for the year. The commission recognized annual accrual as a sound business practice and a proper charge against operating expenses. But since the fund is provided by the ratepayer, he should not be required to provide a substantial profit on it for the benefit of the company.

Working Capital Allowance

The utility's contention for a working capital allowance predicated on the current cash position was rejected as a method "fraught with danger." Materials and supplies were allowed for a 73-day period. This was the full average balance maintained in this account for the test year. Also, the full average balance maintained in the fuel inventory account was allowed. Sufficient cash for sixty days' operating expenses was provided, less fuel cost (otherwise provided), storm damage expense, and interchange of power, neither of which latter items required any immediate cash outlay.

A deduction from working capital was made for federal income tax accruals and deferrals which were not required immediately for income tax payments. This amounted to 17½ per cent of currently payable income taxes, since the company has seventeen months in which to pay twelve months' taxes, together with the entire amount of income deferred beyond the tax year.

Construction in Progress

Construction designed to reach new customers was not permitted to be included in the rate base on the ground that present customers should not be required to pay a return on property intended to serve future customers. To include this item would necessitate estimating potential revenues and expenses applicable to the new plant. Such estimates would be an unsound basis for determining the new plant's contribution to over-all earnings, the commission said.

It was held that construction work intended to replace worn or outmoded equip-

ment should not be included in the rate base because its inclusion would require the customer to pay a return on excess plant. If the one is included, the other would have to be retired.

However, construction designed to improve present service but not replacing old equipment was included. There was also construction work in progress involving minor jobs on which interest during contruction was not charged. This work was included in the rate base. *Re Florida Power & Light Co. Docket No. 5098-EU, Order No. 2515, August 22, 1957.*

Synthetics Used in Textile Industry Cause Special Commodity Classification

THE United States district court upheld an Interstate Commerce Commission order granting a motor carrier authority to transport synthetic products in lieu of, or with, the woolen products it was originally certified to transport, in order to meet the changing needs of the textile industry throughout its area of service. The commission ruled that a new commodity classification—namely, synthetics in substitution for or in combination with wool—which affects the entire textile industry, does not violate due process where previous proceedings had been conducted with notice to the motor carrier industry giving the commission power to establish special commodity carriers when necessary. The right to tailor commodity classifications to fit existing and reasonably foreseeable needs is inherent in the commission even to the extent of authorizing services more extensive than asked for by a carrier. *A. B. & C. Motor Transp. Co., Inc. v. United States, 151 F Supp 367.*

Permit for Sight-seeing Tours

THE New York commission granted an application for a contract carrier permit to operate sight-seeing or pleasure tours from New York city to points and places in the state, subject to certain conditions. Commenting on the protests of existing carriers, the commission said that bona fide sight-seeing or pleasure tours have few of the characteristics of an omnibus line and are competitive with omnibus lines, if at all, only to a minor extent.

However, most of the operations of the applicant were not tours in any ordinary sense of the word. The word "tour," as commonly defined and used, means a rambling or circuitous journey in the course of which a number of places or things of related interest are visited or inspected. One makes a tour *of* something, not *to* something.

With a few exceptions the so-called tours operated by the applicant during the past three years under an interim permit were merely round trips to some point of interest. The inclusion of some activity at the destination did not make them tours, said the commission. Some had been operated with such frequency or regularity as to at least closely approach omnibus line service.

It did not follow though that the application was to be denied. On the contrary, said the commission, the evidence indicated that there were many points of interest which were not readily accessible from New York city by existing means of public transportation. There was a

popular demand for the type of service which the applicant had been providing. The evidence further indicated that traffic for the service had to be developed through advertising and that in general it was not competitive with omnibus service.

Restriction of Operations

The conditions imposed on the applicant were designed to eliminate possible abuses arising from the service. No passengers were to be picked up outside of New York city. No passengers were to be transported who had not contracted for their return to New York city.

Passengers were not to be transported to the same point or place more frequently than once a week, and trips were not to be operated on a fixed schedule as to either time or place. Where there was direct omnibus service pursuant to a certificate of convenience and necessity issued by the commission between New York city and the proposed destination of a trip, a special permit was to be obtained from the commission by the applicant. *Re Bingler Vacation Tours, Inc. Case 20447, July 15, 1957.*

New Company Authorized to Furnish Gas Service

THE New Mexico commission authorized a newly formed corporation to construct and operate a natural gas system in the city of Raton and adjacent areas. Prior to incorporation the petitioner had been a partnership engaged in the sale and delivery of liquefied petroleum gas in bulk and by tank pursuant to a franchise and certificate. Evidence indicated that the cost of natural gas to the consumer would compare favorably with the other major fuels available.

There was a widespread demand for natural gas service sufficient to warrant a finding of public convenience and necessity. Concurrently the commission authorized abandonment of the liquefied petroleum gas business.

Gas Supply

The company proposed to obtain its entire supply of natural gas from Colorado Interstate Gas Company, a pipeline company subject to the jurisdiction of the Federal Power Commission. The parties have agreed upon the major terms of that transaction. They proposed to enter into written agreements as soon as the commission should approve the project. Colorado would apply to the Federal Power Commission for authority to supply the new company. In view of these contingencies the certificate award was made subject to appropriate provisions for the protection of the public interest.

Financing Arrangements

The company had commitments for long-term financing as well as for interim financing. However, the record relating to the company's proposal for financing the estimated capital cost of the project was not sufficiently definite to establish the specific source of funds which would be required beyond the debt financing for which commitments had been obtained. Accordingly the commission approved the proposed debt financing but deferred consideration of further financing and retained jurisdiction to consider future applications for the authorization of securities.

It said that its duty to safeguard the public interest with respect to the issuance of securities by a newly organized corporation proposing to engage in the public utility business can be no different than, and certainly no less than, its duty as to the

issuance of additional securities by a public utility already in operation.

Operating Results

The company submitted an analysis reflecting the anticipated results of operations over the first 5-year period. This study indicated that the proposed operation would yield net operating revenues which would be sufficient to meet the system's debt service requirements and provide a small return on equity beginning with 1960 operations, that the return on equity should thereafter show a slow but stable increase, and that the proposed operation, on the basis of cash flow, would generate sufficient funds to meet debt service requirements, except during the first year's operations. The commission said that this anticipated deficiency in cash flow must, of course, be met by the organizers of the corporation.

The commission was satisfied from the record that the proposed operation, after a reasonable period of time, should enable the company to meet its operating expenses and other operating revenue deductions and provide a reasonable return upon the investment in plant sufficient to enable the company to meet debt service requirement and provide a return on equity sufficient to enable the company to attract additional capital necessary to meet the demands of growth. *Re Peryatel (Northern New Mexico Gas Co.) Case No. 487, August 26, 1957.*

Nonperformance of Contract Obligation Basis for Denial of Refund

A CONTRACT between an electric company and a consumer recited that the consumer was using direct current at a store, and if the consumer converted all present loads from direct current to alternating current before a specified date, the company would refund to the consumer the difference between the alternating current charge and the higher charge for direct current service. The Kansas City court of appeals held that, in order to be eligible for the refund, the customer was required to convert all direct service equipment at such address before the date fixed. Merely moving the store to another location at which only alternating current equipment was used did not constitute performance of the consumer's obligation under the contract so as to entitle him to the refund sought.

Construction Rules

The court pointed out rules of law governing contract construction. The cardinal rule to be observed in construing a written contract is to ascertain and give effect to the intention of the parties unless it conflicts with some positive rule of law. Greater regard is to be had to their clear intent than to any particular words they may have used in attempting to express it.

The rule that if a contract is ambiguous, it must be construed most strongly against the party preparing it, is applicable only when all other means of construction fail. The language of a contract will be given its ordinary and useful meaning unless it is clear that some special or peculiar meaning was intended by the parties.

The entire contract must be considered in determining the meaning of each part, and effect should be given to every part of the contract if that is reasonably possible.

Where the language of a written contract is not clear, the court may consider the situation of the parties and the sur-

rounding circumstances at the time the contract was executed. *Katz Drug Co. v. Kansas City Power & Light Co. 303 SW2d 672.*

Nonadversary Investigation Not Sufficient Proceeding To Revoke Motor Carrier's Permit

A NONADVERSARY proceeding was brought by the Idaho commission against a motor carrier to determine whether the carrier was entitled, under the "grandfather clause," to all of the authority contained in its permit and whether it was operating over the whole of its route. Upon failure to appear and submit information to the commission the carrier's permit was revoked.

The Idaho supreme court reinstated the permit and held that where a commission seeks to revoke, there must be definite charges that the holder has violated or refused to observe an order, regulation, or some applicable state law. A permit is a valuable property right and can only be revoked as provided by statute. *Allied Van Lines v. Idaho Pub. Utilities Commission, 312 P2d 1050.*

Other Recent Rulings

Petroleum Products Pipeline Certificate. The Illinois commission granted an application for a certificate of public convenience and necessity to construct, maintain, and operate a petroleum products pipeline where no existing pipeline in the area had available space to render the proposed service, there was a need for additional service, and public convenience and necessity would be served, since the construction and operation of the line would make markets more readily available to state refiners, producers, and royalty owners, and would be a material benefit to the public by making petroleum products more readily available at the points where they were needed. *Re Ohio Oil Co. No. 44358, August 14, 1957.*

Gas for Irrigation. The Oklahoma supreme court ruled that a statute requiring a natural gas producer to provide gas for irrigation purposes and authorizing the commission to fix prices, terms, and conditions of such service, though the producer had not dedicated its property to such use, would, if enforced, constitute a taking of property without due process of law. *Phillips Petroleum Co. v. Oklahoma Corp. Commission et al. 312 P2d 916.*

Restoration of Telephone Service. The Illinois commission directed a telephone company to restore service to a complainant where the evidence did not sustain the company's position that the telephone had been used for unlawful purposes in violation of its tariff. *Casto v. Illinois Bell Teleph. Co. 44308, August 15, 1957.*

Injunction against Rental Agencies Denied. The United States district court denied an injunction restraining the rental of a truck and the services of a driver from two separate corporate rental agencies and held that for private carriage of goods by persons not common or contract carriers there is no obligation upon a carrier of his own goods to hire his own driver or use his own truck. *Interstate*

Commerce Commission v. Vincze et al. 151 F Supp 449.

REA Projection Studies Adopted. For the purposes of a telephone rate proceeding, the Georgia commission adopted a projected plant investment study and a revenue forecast prepared by the Rural Electrification Administration in connection with a loan to the telephone company. *Re Standard Teleph. Co. File No. 19322, Docket No. 1114-U, July 30, 1957.*

No Rehearing on Little Inch. Finding that no new facts or principles of law were presented, the Federal Power Commission denied an application by barge operators for rehearing of its order (19 PUR3d 76) which in effect approved the conversion of the Little Inch pipeline for the transportation of petroleum products. *Re Texas Eastern Transmission Corp. et al. Docket Nos. G-2503 et al. August 9, 1957.*

Rehearing Inappropriate. The Federal Power Commission sustained a secretarial rejection of an application by a natural gas company for rehearing of a commission order which rejected a notice of withdrawal of filed rate changes, since the order was not a final one and did not dispose of the merits of the proposed changes. *Re Sunray Mid-Continent Oil Co. Docket No. G-11992, August 22, 1957.*

Water Company Return. The New Jersey commission approved an over-all water company return of 6.15 per cent, with 6.19 per cent for the water department and 6.07 per cent for the sewer department. *Andrus et al. v. Packanack Utilities Co. Docket No. 9107, July 17, 1957.*

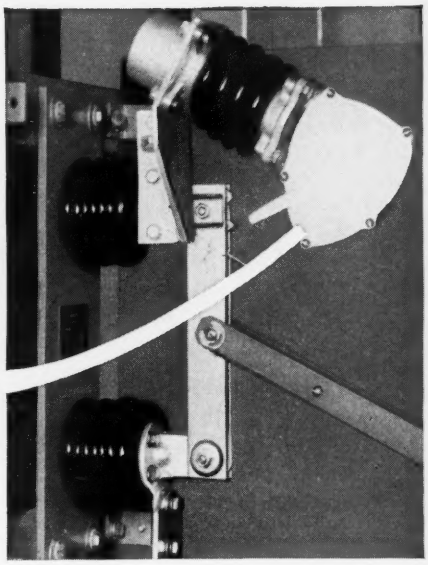
Discontinuance of Open Agency Station. The Missouri commission granted a railroad's application for authority to discontinue an open agency station, except during four months of the year, upon a showing that, although the station had been operating at a profit, public convenience and necessity no longer required year-round operation. *Re Missouri P. R. Co. Case No. 13,681, August 16, 1957.*

Nonexempt Commodity. The United States court of appeals, in upholding a decision finding a carrier guilty of willful falsification of its drivers' records, declared that the transportation of milk products only does not exempt a carrier from complying with ICC regulations relative to qualifications and hours of service of employees. *A. W. Hawkins, Inc. v. United States, 244 F2d 854.*

Civilian and Military Transportation Rates. The United States court of claims held that a railroad which transports scrap steel sold by the Maritime Commission to steel companies is allowed to receive commercial rates based on the percentage of steel produced by the companies and devoted to civilian use, and the land-grant rates based on steel used for military purposes. *Chicago, R. I. & P. R. Co. v. United States, 151 F Supp 734.*

Discontinuance of Railroad Branch. The United States district court upheld an order of the ICC authorizing a railroad's abandonment of a branch line where the evidence supported the finding that continued operation of the branch would impose an undue burden upon the railroad and interstate commerce. *Village of Candor v. United States, 151 F Supp 889.*

...Safe, positive interruptions for bicles and unit type substations



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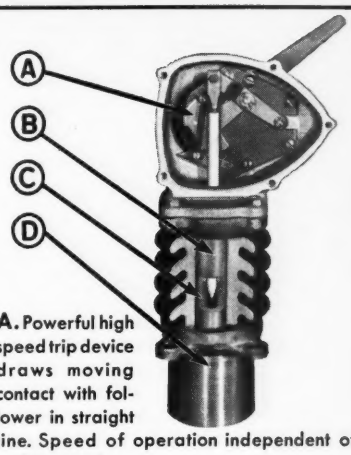
Breaks rated load instantly and decisively... eliminates danger to men and equipment through accidental operation!

Delta-Star Powerupter com- an improved interrupting e with the most modern of nnecting switches and an ex- e automatic trip mechanism makes or breaks instantly ecisively.

werupter is ideal for use in enclosed spaces because is no danger of phase-to- or phase-to-ground faults NO EXTERNAL ARC. For me reason, there is no danger to men or equipment if the unit is accidentally operated.

Powerupter switches are also available in combination with fuses ...in voltage ratings from 7.5 thru 34.5 kv with 600 amp. interrupting capacity, and continuous current ratings of 400, 600, 1200 and 2000 amperes. For further information, write Delta-Star Electric Division, H. K. Porter Company, Inc., 2437 Fulton Street, Chicago 12, Illinois.



A. Powerful high speed trip device draws moving contact with follower in straight line. Speed of operation independent of switch speed.

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• A complete line of wheel-type trenchers built to dig more trench in more places at less cost.

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• Over 30 usable digging speeds in every Cleveland.

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• Full-sized engines in every model... accurate, fast, positive grade control... more bucket capacity... recognized superior quality throughout... built by The Pioneers of the Modern Trencher, originators of every important trencher design feature.

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Industrial Progress

Gas Industry Expansion Continues Apace

e natural gas industry ranks as
ne of the nation's fastest grow-
d expanding enterprises. It has
med since its early growth
in the immediate post-World
I days, into bustling maturity.
ith of the financial community
built-in prosperity has been
cantly expressed by the invest-
f many billions of dollars.
oughout 1957 gas industry
has shown no signs of let-up.
ns for new capital construction
e extensions are outward symp-
of a deep-rooted youthful en-
m and vigor. Its record of
ement to date is enviable. This
ctor of the American economy
s energy sources deep in the
soil of the American southwest.
inklines run all over the nation
rtually every community of ap-
le size. The natural gas pipe-
nd distributors are looking for-
o serving new markets with
uel. Some of these plans are
summarized below. The list is
neans complete, but, represents
pling, or cross section, dis-
d well over the country and con-
plans of both large and small
ies. Later issues will, when
l is available, carry notes on
pansion plans of other natural
mpanies not at hand when this
as assembled.

imore Gas and Electric Com- (Baltimore, Md.), has an-
d that expenditures for the ex-
n of its gas system in the next
ars will be approximately $50,-
0. The new gas construction
will be at the rate of about $9,-
0 per year. This is exclusive of
itures for miscellaneous facili-
luding office and shop quarters,
s, furniture and fixtures, steam
facilities, etc. The 1957 gas program includes two major gas main installations required to make additional gas available to various sections of the company's territory, the largest being the construction of a sixth "gate" station and 12½ miles of 26 inch diameter main to provide more gas for the rapidly growing southern metropolitan area of Baltimore. A major project scheduled for 1958 involves the extension of the 26 inch Manor Gate station main approximately eight miles to the rapidly growing eastern metropolitan area. One indication of the rate of growth of the company's gas business is shown by customer expansion during the past five years when more than 54,900 new gas customers were added to the company's lines, including 11,600 added in 1956. The volume of gas sold almost trebled during the thirty years ending in 1949; natural gas was introduced in 1950 and the volume of gas sold in 1956 more than trebled the volume sold in 1949.

Boston Gas Company (Boston, Mass.), is planning a 1958 capital expenditure program of approximately $3,000,000. Of this amount gas mains, gas services and gas meters account for about $2,300,000. The company expects to change two carburetted water gas sets to oil gas at an expenditure of approximately $200,000. In addition to the capital expenditure program, a limited conversion program is planned to increase the heat value in its mixed gas area from 640 Btu to 800 Btu, the cost of which conversion is estimated at $4,500,000.

The Brooklyn Union Gas Company (Brooklyn, New York), plans to spend $11,679,000 on construction in 1958 as follows:

Production	$ 950,000
Distribution	8,190,000
General	2,539,000
Total	$11,679,000

Central Illinois Light Company (Peoria, Ill.), reports that 1958 plans generally are as follows:

1. Normal replacement of existing lines and services.
2. Extension and bolstering of existing intermediate pressure lines.
3. New business extensions into subdivisions in areas adjacent to its distribution systems.
4. Any new developments in territory not presently served will hinge on securing an additional gas supply.
5. Test drilling will begin in an attempt to try to locate an underground storage field.

Central Illinois Public Service Company (Springfield, Ill.), estimates that gas utility construction expenditures in 1958 will total approximately $1,250,000. In addition to expansion and improvement of the various distribution systems, major projects consist of 16 miles, 6 miles, and 4 miles of 6 inch gas transmission lines at a total estimated expenditure of $500,000.

The Columbia Gas System, Inc. (New York, N. Y.), reports that the 1958 construction program for the System companies has not been completed in detail but it is estimated that the total investment will be in the neighborhood of $100,000,000.

The major projects will include the following:

Construction of a hydrocarbon extraction plant, a fractionation plant and a pipeline to transport liquid hydrocarbons between the two. The extraction plant is designed to recover the heavier hydrocarbons from 170,000,000 cubic feet of gas per day from rich natural gas streams in Kentucky and West Virginia.

The System companies expect to drill 246 new wells into Appalachian

(*Continued on page* 38)

gas sands and 55 wells to oil producing formations.

New underground storage fields will be activated in Ohio and West Virginia and others will be extended in the same states.

About 4400 horsepower will be added to compressors in West Virginia.

Estimates indicate that 38,000 residential and commercial customers will be added to the System's lines in 1958 and that approximately 55,000 new heating customers will be added.

Consolidated Edison Company of New York, Inc. (New York, N. Y.), whose 1957 construction budget included expenditures of $7,245,000 for gas operations, expects to spend approximately $6,500,000 for similar purposes in 1958. Completion of Con Edison's five-year natural gas conversion program in 1956 has reduced the necessity for large expenditures on the gas system. Investment in this system for the foreseeable future will be limited to extensions of the gas distribution system to accommodate load growth and new business. As a result, about $6,250,000 of next year's anticipated expenditures will be for gas distribution plant. Approximately $1,750,000 will be spent on meters and regulators, and about $4,500,0 mains and services.

The Dayton Power and Company (Dayton, Ohio), pr to spend approximately $3,154,0 the expansion and improvement facilities. The major portion amount will be necessary to p gas to a rapidly expanding resi commercial and industrial mark major project is contemplated.

El Paso Natural Gas Co (El Paso, Texas) was authoriz the FPC on December 19, 19 sell and deliver 150,000,000 cub per day of gas, half of which is delivered to the Southern Cali Gas Company and Southern C Gas Company and the other h Pacific Gas and Electric Co The facilities required by the pany for this delivery are expe cost $80,346,000.

In addition, El Paso has cur an application with the FPC to delivery of another 150,000,000 feet to the Southern Californi companies and PG&E, the fa for which delivery are estima cost approximately $105,000,0

Moreover, El Paso has filed plication with the FPC to cove of 100,000,000 cubic feet per the Southern California Edison pany, facilities for which deliver expected to cost $53,951,000.

The facilities required by El for transportation and deliver these quantities of gas consist cipally of 434 miles of main mission pipe line, 116,700 horse of mainline compression, 553 m field pipe line and 62,070 horse of field compression. In ad to these commitments, El Paso preliminary agreement with Southern California gas com covering the sale of another 200 000 cu. ft. per day of gas, to tained from Canada for deliv the California-Nevada border f point in Idaho on the line of th cific Northwest Pipe Line Co System. No application has ye made to the FPC for requisite ernmental authorization.

Pacific Northwest Pipeline pany (which is an El Paso N subsidiary) is currently engag expanding its delivery capaci 714 million cubic feet per day sisting of 639 million cubic f capacity. The estimated co cost of such expansion, involvin marily the construction of one

(*Continued on page* 40)

This announcement is neither an offer to sell nor a solicitation of an offer to buy any of these Bonds. The offer is made only by the Prospectus.

$50,000,000

Niagara Mohawk Power Corporation

General Mortgage Bonds, 4⅞% Series due September 1, 1987

Dated September 1, 1957 *Due September 1, 1987*

Interest payable March 1 and September 1 in New York City

Price 100.867% and Accrued Interest

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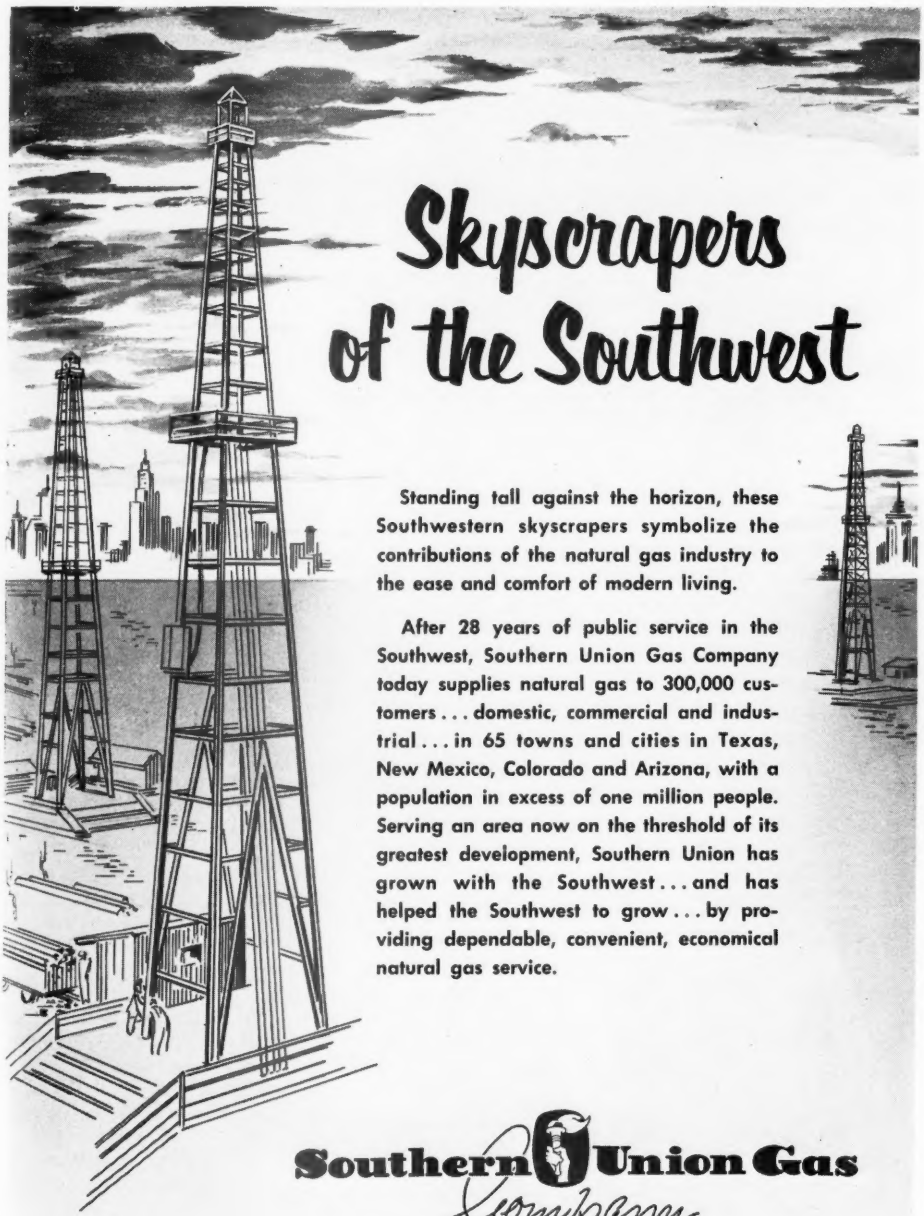
September 17, 1957.



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Standing tall against the horizon, these Southwestern skyscrapers symbolize the contributions of the natural gas industry to the ease and comfort of modern living.

After 28 years of public service in the Southwest, Southern Union Gas Company today supplies natural gas to 300,000 customers . . . domestic, commercial and industrial . . . in 65 towns and cities in Texas, New Mexico, Colorado and Arizona, with a population in excess of one million people. Serving an area now on the threshold of its greatest development, Southern Union has grown with the Southwest . . . and has helped the Southwest to grow . . . by providing dependable, convenient, economical natural gas service.

Southern Union Gas Company

C. H. ZACHRY, President

Headquarters: DALLAS, TEXAS

SAFE OPERATING PRACTICE

Connecting gas services safely, without loss of gas has been a prime requisite to the great majority of gas utility management. The Mueller No-Blo® Method, now in wide use throughout the gas industry, has proven to be a simple safe procedure for making service connections, running laterals, making stop-offs and other jobs in a safe No-Blo manner, without escape of gas.

A complete line of No-Blo fittings and drilling machines and line stopper units of varying sizes permits a gas utility company to perform its work in a safe manner.

If you are unfamiliar with the Mueller No-Blo Method and its related equipment, contact your local Mueller Representative. He will be happy to refer you to other companies who are taking advantage of Safe Operating Practice by using Mueller No-Blo machines and fittings. Or write for the free "How To" book —"Safe Operating Practice"—it tells and shows pictorially how you can benefit with the Mueller No-Blo Method.

MUELLER CO.

Dependable Since 1857

MAIN OFFICE & FACTORY DECATUR, ILLINOIS

pressor station, sales laterals and gathering lines, and the cost of drilling and completion of approximately 96 wells, is approximately $30,000,000.

In order to provide additional service sought by Colorado Interstate Gas Company, it will be necessary for Pacific Northwest Pipeline to enlarge four of its compressor stations by an aggregate of 22,500 horsepower and to enlarge its gasoline extraction plant, at a total estimated cost of $9,200,000. In addition, further sums would be required at an early date to connect new gas supplies, lay additional gathering lines and drill additional wells earlier than would otherwise be required.

Florida Public Utilities Company (West Palm Beach, Fla.), reports that total construction investment for 1958 is expected to be approximately $50,000. If the proposed natural gas line into South Florida is completed in 1958, investment will be much higher than this amount.

Gas Light Company of Columbus (Columbus, Ga.), anticipates their construction program for the fiscal year beginning September 1, 1957 will amount to $745,000. This amount is allocated as follows:

Estimated cost of mains, services and meters to serve new customers	$290,000
Estimated cost of improvements to distribution system	35,000
Estimated cost of complete addition to service building and warehouse ($34,000 previously expended)	61,000
Estimated cost to complete second propane air peak shaving plant ($53,000 previously expended)	307,000
Estimated cost of general plant equipment and fixtures	52,000
Total	$745,000

It is estimated that 1,700 new customers will be added.

Haverhill Gas Company (Haverhill, Mass.), expects to spend about $400,000 in 1958 on additions to plant, mostly distribution facilities.

Laclede Gas Company (St. Louis, Mo.), reports that expenditures for new construction amounted to approximately $12,000,000 by the end of the fiscal year, September 30, 1957. Expenditures for extension of distribution facilities and general plant equipment totaled $9,500,000. Further development of underground storage required $2,500,000.

Construction expenditures for 1958 are estimated to reach $11,300,000. Construction of distribution facilities to serve new customers and re the system, in addition to const of general plant and purch equipment will amount to $9,4 Continued development of ground storage and further ex of the project will amount to $ 000.

Milwaukee Gas Light Co (Milwaukee, Wis.), officials e an outlay of approximately $ 000 for constructing main ext to growing suburbs and for e main replacement and impro during 1958.

Among major projects c plated are extensions of suppl in the neighborhoods of Slinger Bend and Port Washington, which are rapidly growing com ties in the northern portion company's service area. Some feet of six and eight inch line laid.

Other projects include supp service lines into the large, ne waukee county Zoo and into a million dollar shopping center the western fringes of the met tan district.

Missouri Natural Gas Co (Farmington, Mo.), plans to about $1,250,000 for new constr during the twelve months endi tember 30, 1958. During the year ending September 30, 19 company expended close to $ 000 for new construction. This a total of $2,250,000 for the 1957 and 1958. This expense w vide facilities to serve four new munities and take care of n growth in the company's presen munities.

New England Gas and E Association (Cambridge, M and subsidiary gas companies to spend $2,600,000 in 1958 o construction projects consisting cipally of minor improvements isting production plants and ext of the distribution systems to new customers.

New Jersey Natural Gas pany (Asbury Park, N. J.), to spend $2,700,000 for constr during fiscal 1958. The major p is a 26 mile, 8-inch transmissio required to meet growth in the pany's service area.

New Orleans Public Servic (New Orleans, La.), estimate its gas department constructi

(*Continued on page 42*)

In

New Jersey GAS *is preferred by the best of cooks!*

Today — more than ever more people are enjoying all seven ways of using Public Service gas!

PUBLIC SERVICE

Gas

SAVES YOU TIME, WORK AND MONEY

penditures for the year 1958 will be as follows:

Replacement and additions to gas meter and regulator repair shop, garage, and storeroom buildings	$ 543,000
Mains, services, meters and regulators for both service to new customers and for increasing capacity to meet additional customer demands	$ 720,000
Replacement of mains and services	$ 470,000
All other distribution and general plant	$ 197,000
Total	$1,930,000

Northern Illinois Gas Company (Aurora, Ill.), reports that its construction program for the four-year period 1957-1960, as now scheduled, calls for the expenditure of approximately $75,000,000. The outlay was expected to be about $21,000,000 in 1957, $20,000,000 in 1958 and $17,000,000 in each of the years 1959 and 1960. It now appears, principally because of the somewhat slackened pace of new home building in northern Illinois and postponement of its proposed propane cavern storage projects, that 1957 expenditures will fall short of the estimate. However, new home building demands remain at a relatively high level, and, in 1958, construction work will continue to consist largely of main extensions and connections to serve the large number of new customers expected to be added. In addition, the construction program will provide further increases in system capacity to supply the continued and anticipated further growth of the company's house-heating business. The program, as now planned, does not include any possible outlays for major supply or storage facilities. The company is currently in the process of reviewing this program and, as customary, extending it for another year.

Northern Natural Gas Company (Omaha, Neb.), has filed with the Federal Power Commission an application seeking authority to construct facilities to bring natural gas service to an additional 213 communities in the Northern Plains. If approved, this would bring the total number of Northern Plains communities being served by Northern to 597. The 213 additional communities are the most Northern has ever filed for in a single application.

Northern proposes to incre daily system salable capacity million cubic feet. Of this, 47 is earmarked for communities attached to the pipeline syste ing 102 million for the additio munities. This would increase ern's total daily salable capaci approximately 1.19 billion to 1 lion cubic feet. Such an incr capacity would require the co tion of 365 miles of main lin 1090 miles of branch line, 17 border stations, 20 new com engines and the conversion of compressor units.

The additional main line pip counted for by 152 miles of m loops and 213 miles of main l tensions.

The estimated cost of the ad facilities is $65,662,000.

Ohio Gas Company (Ohio), announces that const plans for 1958 are as follows:

For normal extensions and replacements	
For extensions to service additional communities	
Total	

(*Continued on page 44*)

Only 7 to 10 Minutes to Renew Service Life of New Gate Valve

Replace seat rings in Fairbanks patented Renewable Seat Ring Gate Valves without removing valve body from line.

For the first time in valve history, you can replace the seat rings in a renewable seat ring gate valve, under all normal conditions, in less than 10 minutes, using just a screw-driver and *with the valve body still installed in the line* through an exclusive and patented development of The Fairbanks Company.

Fairbanks new 200 pound steam working pressure gate valves, available in sizes ½" through 2" in the rising and non-rising stem construction, have been field tested for over two years under all conditions from steam to corrosive liquids and have proven completely satisfactory—absolutely dependable.

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USED SINCE 1897
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PIPE STOPPERS

OF ALL KINDS

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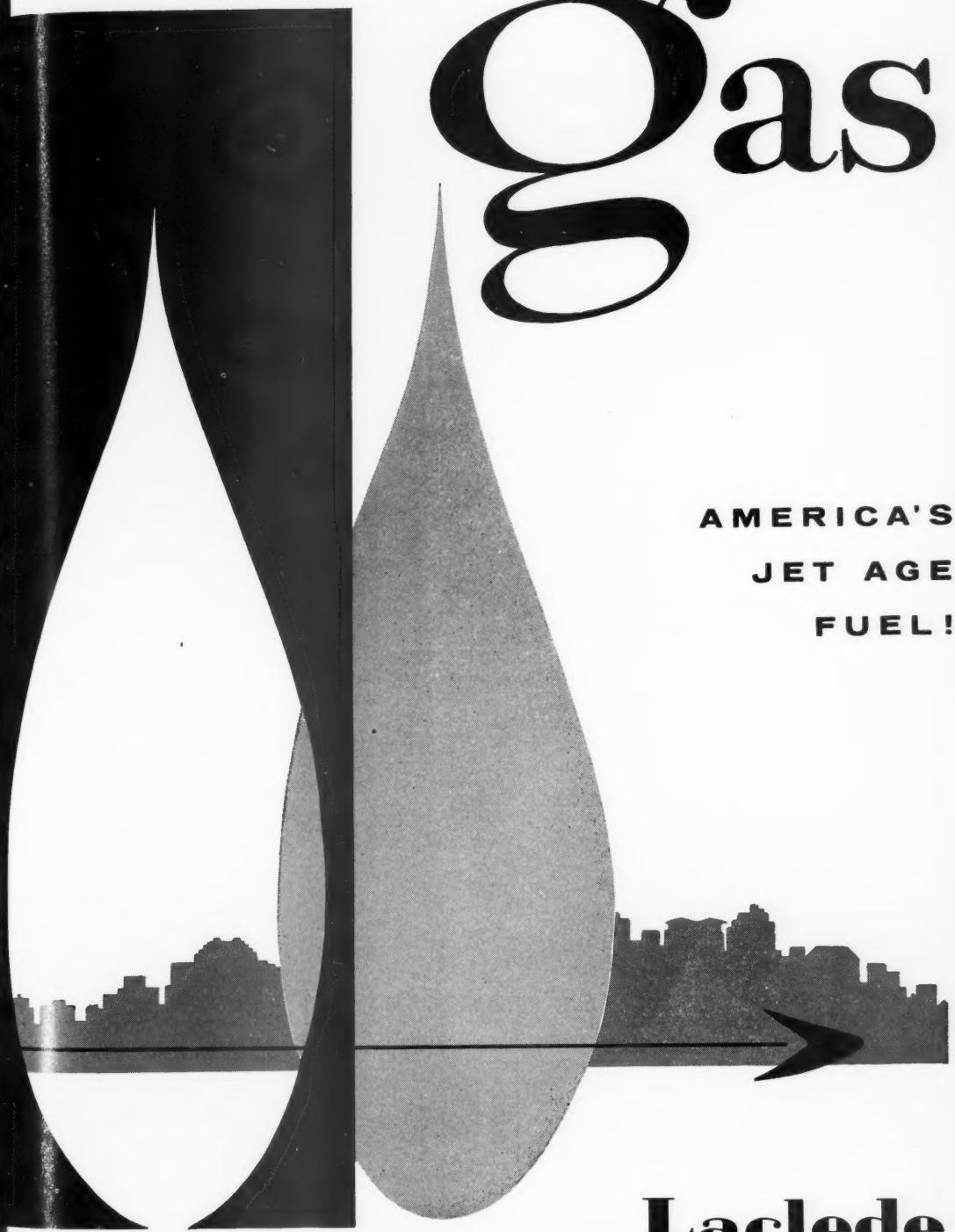

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clede has shared in a rebirth of community
irit that is changing the face of the
Louis area, reshaping its very future.

Laclede Gas
COMPANY

Oklahoma Natural Gas Company (Tulsa, Okla.), expects to spend approximately $11,000,000 during the 1958 fiscal year. Major projects contemplated are:

1. The development of gas and oil leaseholds	$1,750,000
2. Installation of twenty-three miles of 12 in. line to serve new industrial business	$ 673,000
3. Extensions to new gas supplies	$ 450,000
4. Replacement of 10" and 12" transmission lines with larger diameter pipe for increased capacity	$1,050,000
5. Relocation of lines due to highway and street construction	$ 700,000
6. Additional cushion gas in underground storage projects being developed	$ 400,000
7. Improvements to gasoline plants	$ 500,000

The remainder of the construction budget will be used for necessary renewals and betterments connecting new customers, etc.

Pacific Gas and Electric Company (San Francisco, Cal.), reports that significant expansion projects planned, in progress and recently completed by its Department of Gas Operations are as follows:

(1) Plans to construct a $330 million pipeline system to transport natural gas from Canada to California were announced by the company on July 12. The project would connect the California market to important new natural gas resources in the Province of Alberta.

To purchase Canadian gas for the project, the Alberta and Southern Gas Co., Ltd., has been formed as a subsidiary of PG&E. Its headquarters are located at Calgary, Alberta.

The proposed pipeline will be 36-inch diameter and will span approximately 1300 miles from Alberta to the San Francisco Bay Area. Initial transmission capacity is planned to be 400,000,000 cubic feet daily. About 550,000 tons of steel will be required for the project, planned for completion in 1960.

(2) Work is in progress on the final 138 miles of "looping" on PG&E's 502-mile-long Super Inch pipeline which brings Texas and New Mexico natural gas to Northern California. When this job is finished, expected to be in February 1958 Inch will have a daily transmis pacity of 950,000,000 cubic fe ditional compressor facilities completed later in the year crease the capacity to 1,025,0 cubic feet. It will represent an ment by PG&E of $128,512,00 per Inch first went into ser 1950.

(3) Work is well advanc PG&E's $9.4 million 165-mi pipeline which will carry natu from Sacramento Valley fi California to the Humboldt re the state's northern coast. T 12-inch line originates near G California, and crosses the Trinity mountains en route to the coast region cities of Eurek tuna, Fernbridge, Loleta and Initial transmission capacity 21 million cubic feet daily.

(4) PG&E's $5 million W Line, which introduced a new of natural gas to the rapidly-e ing Sacramento area of Cali was completed last June. The 7 long 18- and 20-inch line origin the Beehive Bend Field of Calif Sacramento Valley and extends the valley's west side. Interco with the older Eastside Line, t facility completes a loop for around the Upper Sacramento

(5) Specifically in 1958, PG timates it will invest $30,313,0 capital improvements to its n gas transmission and distributio tem. Most noteworthy of p planned for completion entirely 1958 are a 10-mile main extensi related distribution facilities to the community of Ridgecrest Mojave Desert area, and the con tion of 18 miles of main to rei supplies to the cities of Walnut Lafayette and Orinda in Contra County to the east of San Fra Bay. In addition, a heavy progr routine construction will be carri to supply increasing numbers o tomers and increased usage all the PG&E natural gas system.

(6) On August 31, 1957, P was serving 1,483,697 natural ga tomers. The increase during th ceding twelve months totaled 52,

Plateau Natural Gas Com (Colorado Springs, Colo.), expe acquire virtually all of the prop of an operating gas company next year which will increase the pany's total investment from app mately $3,000,000 to $5,500,00

(Continued on page 46)

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29 West Lancaster Avenue, Ardmore, Pa.

addition, the company will probably spend in the neighborhood of $300,000 for new construction next year.

Public Service Company of Colorado (Denver, Colo.), and its wholly owned subsidiaries, The Pueblo Gas and Fuel Company and the Cheyenne Light Fuel and Power Company, will invest approximately $5,882,500 in new facilities during 1958 to extend and improve natural gas service throughout its statewide system.

Included in this figure are funds for reinforcements to present distribution systems, main extensions to new customers and new subdivisions, and relocation of present facilities for highway and street improvement projects. Two new service centers, housing men and equipment, will be constructed in suburban areas in order to provide for improved customer service.

Rio Grande Valley Gas Company (Brownsville, Texas), expects that expenditures in 1958 on necessary extensions and replacements will amount to about $600,000. No major construction program is planned.

Rochester Gas and Electric Corporation (Rochester, N. Y.) estimates that it will spend $5,000,000 on construction in 1958. It is expected that 3,000 new customers will be added.

San Diego Gas and Electric Company (San Diego, Cal.), estimates that the gas department will spend approximately $5,300,000 in 1958 for capital additions. Distribution facilities to serve an estimated 12,000 new customers will cost about $1,800,000. Approximately $2,342,000 will be allocated to the following major projects:

1. Installation of 20 miles of 24-inch transmission pipe paralleling existing Moreno-Mission transmission line .. $1,900,000
2. Installation of 24,000 feet of 8-inch distribution feeder line between Oceanside and Vista 190,000
3. Installation of 25,000 feet of 10-inch distribution feeder line in Clairemont area, San Diego 250,000

The balance of $1,160,000 will be used for various smaller projects, mainly involving improvements in existing facilities and relocation of mains to accommodate state highway construction.

Savannah Gas Company (Savannah, Ga.), reports that construction expenditures of $1,029,500 in 1958 will round out an expansion program started in 1957 amounting to $3,351,000. The additional construction will provide Savannah Gas with a new standby plant and service facilities for 61 new subdivisions in the Savannah area.

South Jersey Gas Company (Atlantic City, N. J.), is planning construction expenditures of approximately $1,800,000 for the year 1958.

Most of this construction budget is for mains, services and meters to supply new customers, and reinforcement mains to provide adequate service in rapidly growing areas. About $125,000 is provided for constructing a new divisional sales and office building at Glassboro, New Jersey.

No construction of production facilities is planned during 1958. The company expects to receive an additional allocation of 7,000 Mcf per day of natural gas starting this December which, together with volumes already under contract, will bring the peak day natural gas supplies to over 42,000 Mcf. This, together with existing production capacity for "peak shaving" will be sufficient to meet market requirements until late 1958 when the company plans to contract for a further increase in natural gas supplies.

Southern Indiana Gas and Electric Company (Evansville, Ind.), reports that a preliminary estimate indicates that expenditures i will amount to $1,385,000. Th mate includes approximately $ for gas storage field projects balance for such items as laneous additions and improv to the distribution system in gas regulator stations, and f business extensions.

Southern Union Ga Co (Dallas, Texas), anticipates th construction expenditur s f provement of its natural gas fa during 1958 will total approxi $11,000,000, up slightly from pated outlays in 1957.

The company's construction for next year presently calls major projects. Bulk of the com expenditures will go toward d of new wells, adding new cust and general improvement of tra sion and distribution systems th out its service areas in Texas Mexico, Arizona and Colorado.

Included among the 1957 co tion activities are new warehous terminal building in Albuquer temporary gasoline plant for e tion of heavier hydrocarbons i Arriba county, New Mexico, a largement and replacement o miles of 20-in. main north of querque.

The company's 1957 constr budget, in round figures includ

Drilling	$ 2
Production	1
Transmission	1
Distribution	4
General	
Total	$10

Tennessee Gas Transmi Company (Houston, Texas) applications pending before the eral Power Commission for cer tion of the following additional f ties:

1. A 30-inch-diameter, 55 pipeline from the lower Missi Delta south of New Orleans t existing Tennessee Gas Syste Portland, Tenn.

2. A 24-inch, 76-mile pipeline Coudersport, Pa., to Hamburg, York.

3. Loop lines totaling 264 mi Tennessee, Kentucky, West Vir and Pennsylvania.

4. Approximately 120,000 tional compressor horsepower. includes additions to existing pressor stations in Tennessee, tucky, Ohio, Pennsylvania, Texa

(*Continued on page* 48)

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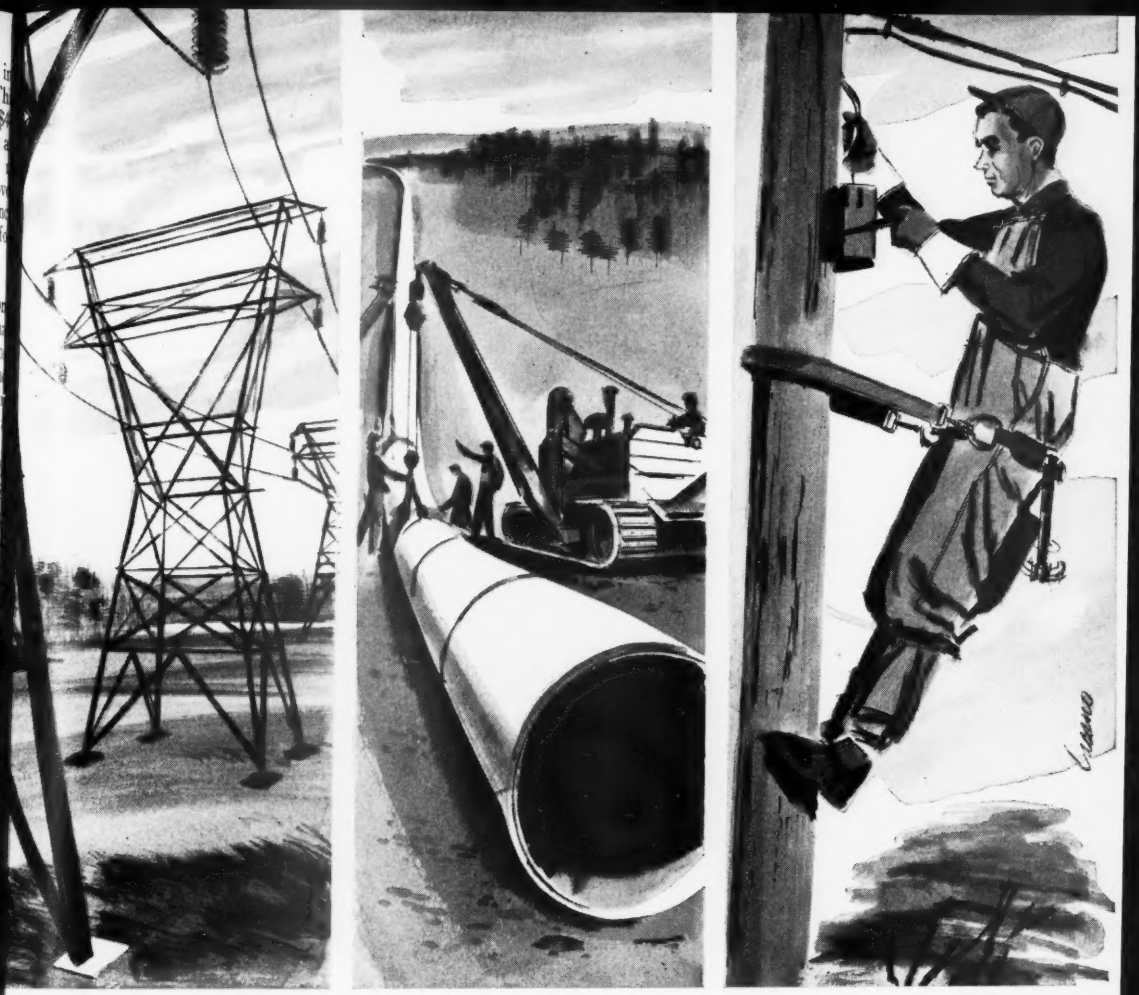

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Louisiana, as well as proposed new compressor stations in Tennessee, Mississippi, Texas, New York and Pennsylvania.

The estimated total cost of these facilities is approximately $147,000,000.

Texas Eastern Transmission Corporation (Shreveport, La.), reports that the year 1958 points to another year of expansion. So far the company plans to enlarge its natural gas system daily delivery capacity by 100,000 Mcf.

This program is expected to cost Texas Eastern and its wholly-owned subsidiary, Texas Eastern Penn-Jersey Transmission Corporation, approximately $48,796,100 and will consist of adding some 333 miles of various diameter pipeline and some 6,200 compressor horsepower to the existing system. Federal Power Commission authorization and construction of this program is expected to take place during 1958.

The company will complete one of its most active years when 1957 has ended. During the year the company was authorized to remove a 1,168-mile segment of its Little Big Inch pipeline from natural gas service to construct substitute facilities to replace the gas capacity in the system of the removed portion of the line. The Little Big Inch was reconverted to become a carrier of petroleum products. In addition, authorization was received to construct new facilities that would add some 110,000 Mcf to the daily delivery capacity of Texas Eastern's natural gas system. These projects combined cost approximately $126,322,400 and added some 821 miles of new pipeline to the system and approximately 109,910 compressor horsepower.

Another major project, started in 1956, was completed in 1957 and added some 690 miles of pipe and 32,250 compressor horsepower to the system. This increased authorized daily delivery capacity on the natural gas system of some 250,000 Mcf. The project involves importation of substantial quantities of natural gas from Mexico, and on August 15th this gas started flowing into the United States.

Transcontinental Gas Pipe Line Corporation (Houston, Texas), reports that their construction plans for 1958 have not yet been finalized. It is expected that expenditures will ably be greater than the more $100,000,000 this year.

The United Gas Improv Company (Philadelphia, Pa.), to spend approximately $5,000, new gas construction during The greater part of this mone be spent for additions to the dis tion system. Major item inclu construction of approximately 9 of 12 inch natural gas la eral f Harrisburg division at a cost proximately $600,000 nd s miles of 12 in. and 16 in. main Lehigh Valley division t a approximately $950,000.

Washington Gas Light Co (Washington, D. C.) anticipate construction expenditures fo year 1958 will approximate $1 000 detailed as follows:

Facilities to serve new customers	$5
Pressure mains and facilities	1
Distribution system replacements	2
Gas storage facilities	
Structures, transportation and other equipment	1

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st Ohio Gas Company (Lima, , estimates its construction pro- for the year 1958 will total 00. This program, which repre- syste -wide expansion and im- ment f facilities is summarized ows:

smissi n plant	$300,000
ibutio plant	600,000
al pla t	50,000
tal	$950,000

2 Billion More In Projects Sough For Natural Gas

nation's natural gas industry sked approval for a billion and ter dollars' worth of construc- rojects over and above the more $5.5 billion authorized by the al Power Commission up to Jan- l of this year.

s is revealed in the 1957 edition atural Gas Construction Data," hed by the Gas Appliance Manu- ers Association. It shows that atural gas transmission projects —not counting billions in other ndustry expansion moves—are g the $7-billion mark for post- rojects approved or pending.

e GAMA study traces some of urging demand factors behind the continuing giant-step growth of the industry and shows that almost every corner of the nation will share the increased fuel supplies being made available by the expansion program.

At the beginning of this year natural gas projects before the FPC for hearing and disposition totaled $750,138,000, the survey points out. Another section lists major projects totaling $486,120,000 for which application was made to the commission during the first four months of 1957.

During 1956 FPC approved natural gas construction involving expenditures of $548,947,000, the study points out. That brought to $5,589,422,000 the total in such approvals from July 1, 1945 to January 1, 1957.

Natural gas construction authorized by FPC in 1956 is shown to involve 6,665 miles of line, 1,169,984 tons of steel pipe and installation of compressors aggregating 358,975 horsepower. When completed, the 1956 projects will add 2.25 billion cubic feet a day to the capacity of fuel delivery facilities.

The entire gas industry pipeline system is shown to now total 523,960 miles, of which 152,490 miles are classified as transmission, 324,100 distribution and 47,370 field and gathering lines.

Harold Massey, GAMA managing director, said the annual study is made to provide financial organizations, the investing public and business units with detailed, up-to-date information about expansion in the natural gas industry.

The publication lists the cities to receive new or additional natural gas supplies, and provides names and addresses of pipeline and utility companies participating in pipeline construction approved in 1956 or pending approval as of January 1, 1957. It details the mileage, cost, line sizes, estimated steel pipe tonnage, compressor horsepower, FPC docket number and purpose of each project.

"Natural Gas Construction Data" is available at $3 per copy from the Marketing and Statistical Department of the Gas Appliance Manufacturers Association, 60 East 42nd Street, New York, 17, N. Y.

Gas Appliance Men See Gains In 1958

MANUFACTURERS of gas appliances and equipment anticipate

(*Continued on page* 50)

14 Per Cent More Gas Users in 1 Year

We're Growing

Montanans are going for gas in a ig way!

As a result of our current expansion rogram, which saw gas introduced nto more than a half dozen communi- ies in widely separated parts of the tate last year, we have nearly 14 per ent more customers than a year ago —53,122, compared with 46,642.

In the scene at the right, crews are shown laying pipe toward a new community. Gas for our system comes from Montana, Canada and Wyoming.

THE MONTANA POWER COMPANY

moderate sales improvement during the balance of 1957 and in 1958, but do not expect to equal 1956 volume in either year.

The consensus of 147 manufacturers surveyed by the Gas Appliance Manufacturers Association is that sales this year will fall 10.9 per cent below 1956, and that 1958 will show an increase of about two per cent over 1957.

Edward R. Martin, GAMA's director of marketing and statistics, pointed out that the entire major appliance and equipment field has been adversely affected by the decline in new housing starts and a lag in the rate of new family formations. As a result, he said, nearly all major home appliance and equipment categories fell below 1956 levels during the first half of 1957.

For example, sales of oil-fired central heating equipment were down 13 per cent; gas-fired central heating equipment, down 14 per cent; electric storage water heaters, down 17 per cent; automatic gas water heaters, down 11 per cent; electric ranges, down 19 per cent; gas ranges, down 11 per cent.

The only major residential appliances to record increases during the first half were gas and electric built-in ranges.

Manufacturers of gas-fired central heating equipment—warm-air furnaces, boilers and conversion burners—whose sales were off 13.6 per cent during the first six months of this year expect to wind up the year 13.1 per cent below 1956. Consensus is that 1958 should show a six per cent gain over 1957.

Furnace manufacturers are the most optimistic of the heating equipment makers. Only six of 49 furnace manufacturers expect to do less business in 1958 than in 1957, while 33 companies expect larger volume. Although the consensus for the industry points to a 7.7 per cent increase in 1958, sales could go up 10.4 per cent if individual companies perform up to expectations.

Gas boiler manufacturers expect to finish this year 3.8 per cent below 1956 and gain 5.8 per cent in 1958. With only one of 23 boiler makers expecting a sales drop in 1958 and 20 anticipating increases, 1958 sales could increase by as much as 11 per cent.

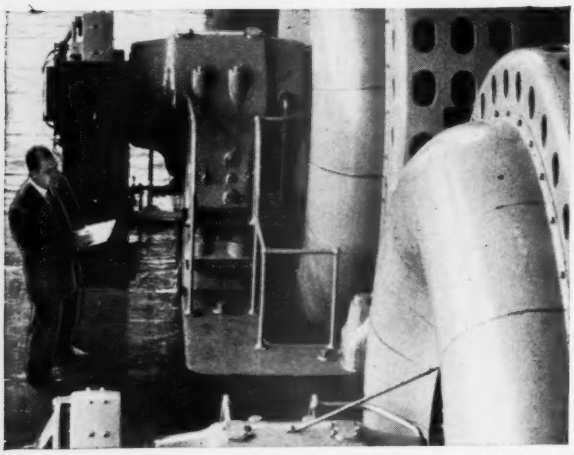
Automatic gas water heater m facturers, who hit an all time hi 1956 of 2,762,100 units, expec 1957 total to be down 6.2 per While the consensus is that 195 show a modest increase of 1.5 per over 1957, 27 of 36 manufact look for their own sales to incre 1958, and fulfillment of indivi company expectations could mea increase of 11.2 per cent t 2,88 units—a new high.

Manufacturers of domestic ranges—both free-standing and b ins—expect to ship 1,977,000 during 1957, 9.2 per cent below volume. An increase of 2.0 per ce 2,017,400 units is anticipated 1958.

Makers of built-ins expect sales to top 1956 volume by 13.6 cent to set a new record of 187 units. With all 13 reporting compa expecting increased business year, the outlook is for an increa 218,400 units, a gain of 16.4 per c If individual companies achieve t expectations, the total may r 230,000 units.

Free-standing ranges in 1957

(*Continued on page 52*)



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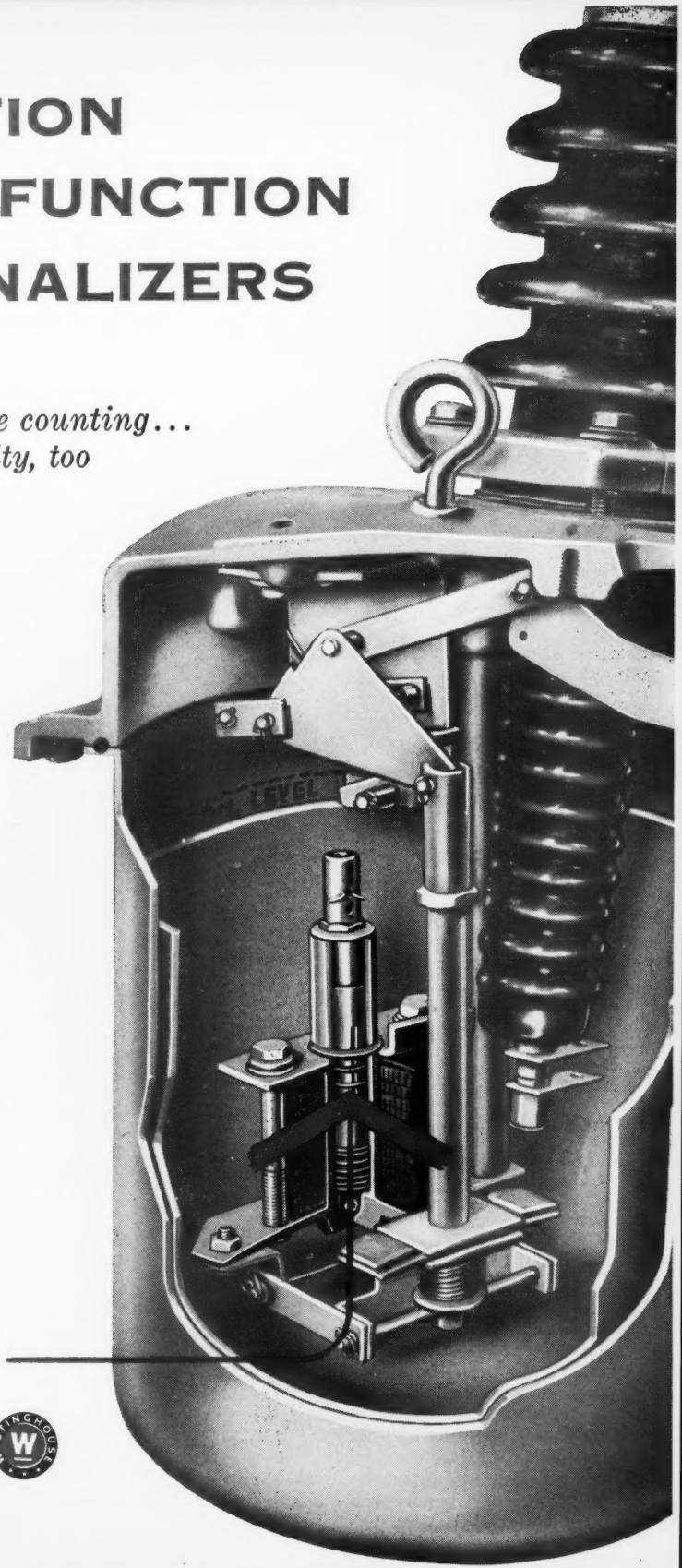

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be down 11.0 per cent from 1956 to 1,790,000 units. The consensus points to a slight increase, one-half of one per cent for 1958, but gains expected by 11 of 19 companies could produce an increase of 7.1 per cent to raise the industry total to 1,917,000 units.

Makers of direct heating equipment —many of whom also produce central heating equipment—expect 1957 sales to total 1,373,000 units in 1957 and 1,400,000 in 1958. Individual expectations indicate 1958 sales could reach 1,443,000 units.

Makers of vented recessed wall heaters expect 1957 sales to be 296,500 units, 8.8 per cent below 1956. Sales in 1958 are likely to be 4.0 per cent below 1957, but may achieve a gain up to 4 per cent.

Floor furnace manufacturers figure to finsh this year with 102,200 units sold, 16.3 per cent below 1956. Feeling is that 1958 sales will not equal 1957 and that the decrease will run anywhere from 1.8 to 7.5 per cent.

Two newer members of the domestic gas appliance family—domestic incinerators and gas clothes dryers—anticipate increases in 1958 as more of their products reach the market. Reports on gas dryers are insufficient for projection, but incinerator manufacturers' estimates indicate 1958 sales will run 22.1 per cent above 1957.

Manufacturers of commercial gas equipment are somewhat more optimistic than the domestic goods producers. Five out of six producers of ranges used in hotels, restaurants and institutions look for sales increases in 1958. Makers of commercially used unit heaters and duct furnaces also expect substantial gains in 1958 with unit heaters running to a 1958 total of 135,700 units, 8.3 per cent above 1957. Duct furnace sales are likely to be 14.3 per cent greater in 1958 than in 1957.

Canada-United States Natural Gas Pipeline

TOTAL expenditures for a planned Alberta-California gas pipeline will reach nearly $500 million, according to J. K. Horton, president of Alberta and Southern Gas Co., Ltd. He said the proposed line would have an initial daily delivery capacity of 450,000 mcf and will run from Alberta to the San Francisco Bay area. Completion of the line is set for late 1960. This, however, depends upon the necessary clearances from Canadian provincial and federal governments and our own FPC. If given, construction would start in 1958. Economic benefits which the project would bring to Alberta were cited as the initial investment for building gathering systems, transmission pipelines, compressor stations and other processing plants. It was estimated that revenues of $20 million would flow from the United States into Canada for gas sales. The Alberta and Southern Co., Ltd. was formed late in August. It is composed of Canadian Western Natural Gas Co., Northwestern Utilities, Ltd., Canadian Bechtel, Ltd. and Pacific Gas & Electric Co.

Arkla Corporation Takes Over Servel Gas Air Conditioning

ARKANSAS Louisiana Gas Company, Shreveport, La., recently completed purchase of Servel, Inc.'s gas air conditioning division.

J. C. Hamilton, president of Arkansas Louisiana Gas Company, announced that Arkla Air Conditioning Corp., a Delaware corporation and a wholly owned subsidiary company of Arkansas Louisiana Gas, will manufacture and sell year-round gas air conditioning equipment, providing new capital to expand production, sales and promotion on a nation-wide basis.

The units to be produced by the new Arkla Corp., will bear the trademark name, "Arkla-Servel," Mr. Hamilton said, and also will carry the trademarks "Sun Valley" and "All-Year."

Mr. Hamilton emphasized that the transaction involves only the gas air conditioning division of Servel and not the appliance division, which manufactures gas refrigerators. The new company, Arkla, is in the year-round gas air conditioning business, Mr. Hamilton said, and added that "it will become a major factor in the national air conditioning field."

All organization details of Arkla have been completed, "except for the sales force, which will be greatly expanded." The sales headquarters will be located in Little Rock, Ark., home office of W. R. Stephens, chairman of the board of Arkansas Louisiana Gas Co., who also will be chairman of Arkla. Mr. Stephens is expected to "take an active leadership in the air conditioning sales organization."

It's Old Stove Round-Up Time!

IT'S "Old Stove Round-Up Time" in the gas industry. Just what its name implies, the Old Stove Round-Up campaign is designed to round up old obsolete model stoves and replace th with the latest model gas ranges.

A PAR activity of the Ameri Gas Association with the cooperat of the Gas Appliance Manufactur Association, the campaign will run three months, September thro November, the peak season for sel home appliances.

The gas industry estimates close to 2,000,000 gas ranges will sold this year. For the first se months of 1957, gas range sales 1,103,000 representing $112,100, in factory billings. Sales of buil gas ranges already show an increa of 14% over the same period l year.

Pacific Coast Gas Associatio Names Gueffroy President

C. H. GUEFFROY, president the Portland Gas and Coke Compa was elected president of the Pac Coast Gas Association, succeeding T. Arden, president of Robertsha Fulton Controls Company. Mr. Gue roy's selection was announced at 64th annual convention of the PCG

R. R. Blackburn, senior vice pre dent of the Southern California G Company, was named vice presid and Harry McGann, Pacific Gas a Electric Company, was elected tre urer.

Mr. Gueffroy has had 38 years gas utility operations. He joined Po land Gas and Coke Company in 19 as secretary to the president, and a several advancements assumed t presidency of the company in 19 He is presently serving as a direct of the American Gas Association.

LeTourneau Issues Bulletin On Offshore Platforms

A NEW 16-page illustrated brochu describes basic requirements for proposed offshore platform which w operate in waters up to 600 feet— six times deeper than presently p sible.

A total of 11 photographs a drawings illustrate the brochu which actually is based upon a pap delivered recently by R. L. LeTou neau, vice president of R. G. LeTou neau, Inc., before the petroleum div sion of the A.S.M.E. at Tulsa. T of the brochure is "Mobile and Fix Platforms for Waters Up to 6 Feet."

For free copy of the material, wr to R. G. LeTourneau, Inc., 2399 So MacArthur, Longview, Texas.

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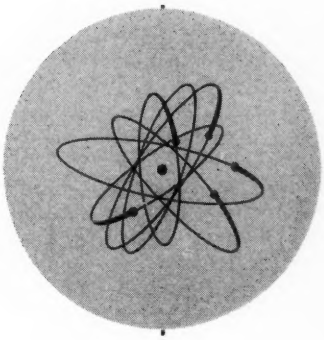

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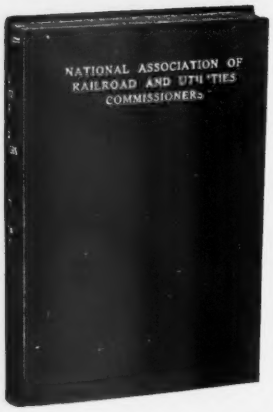

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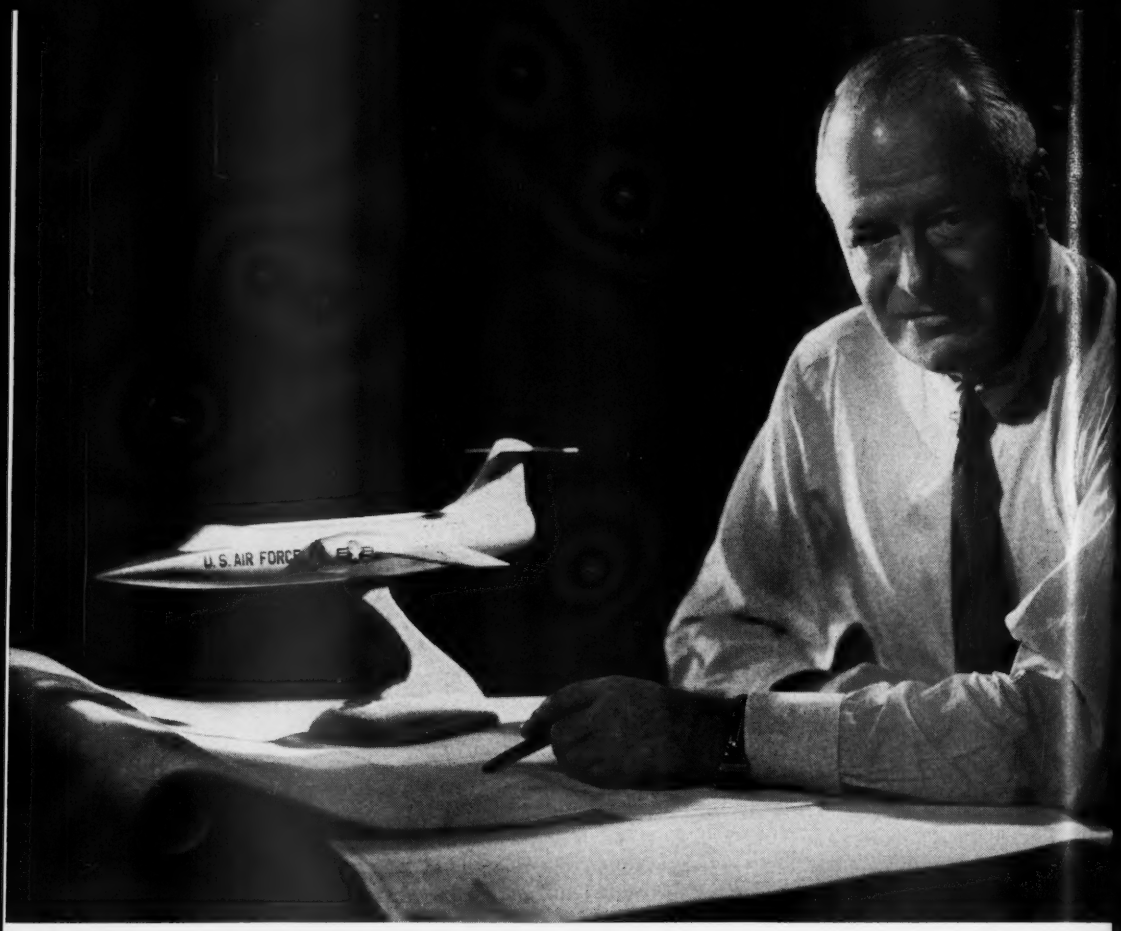

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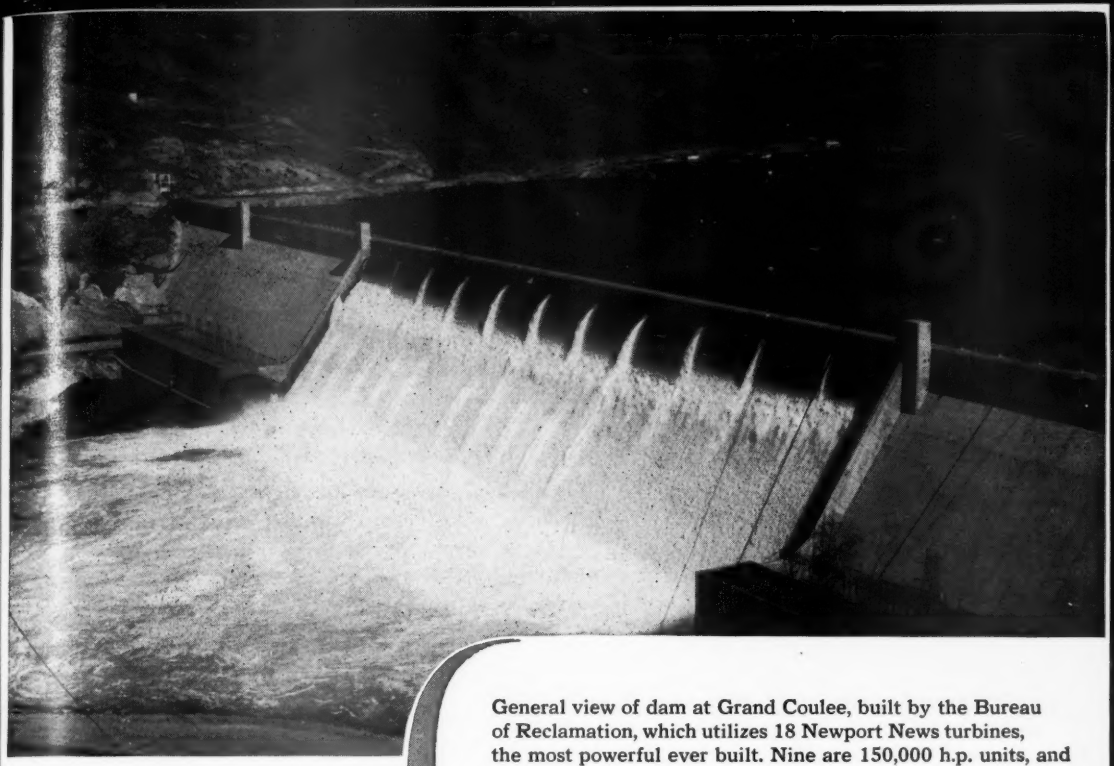

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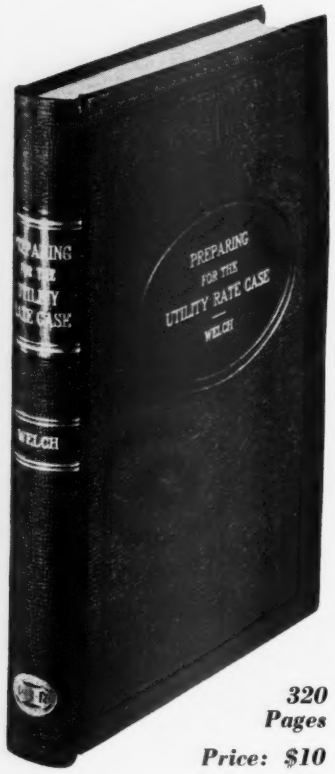

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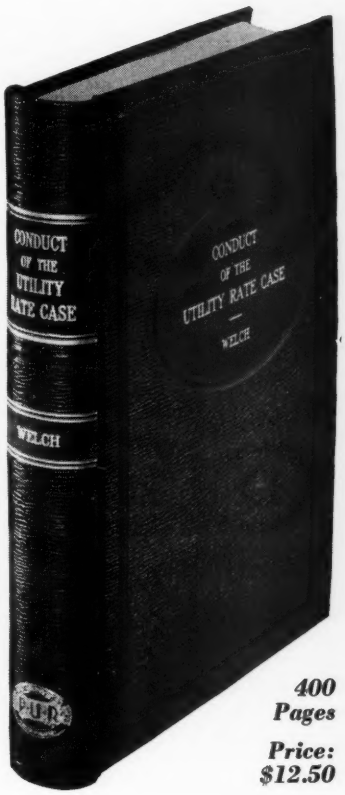

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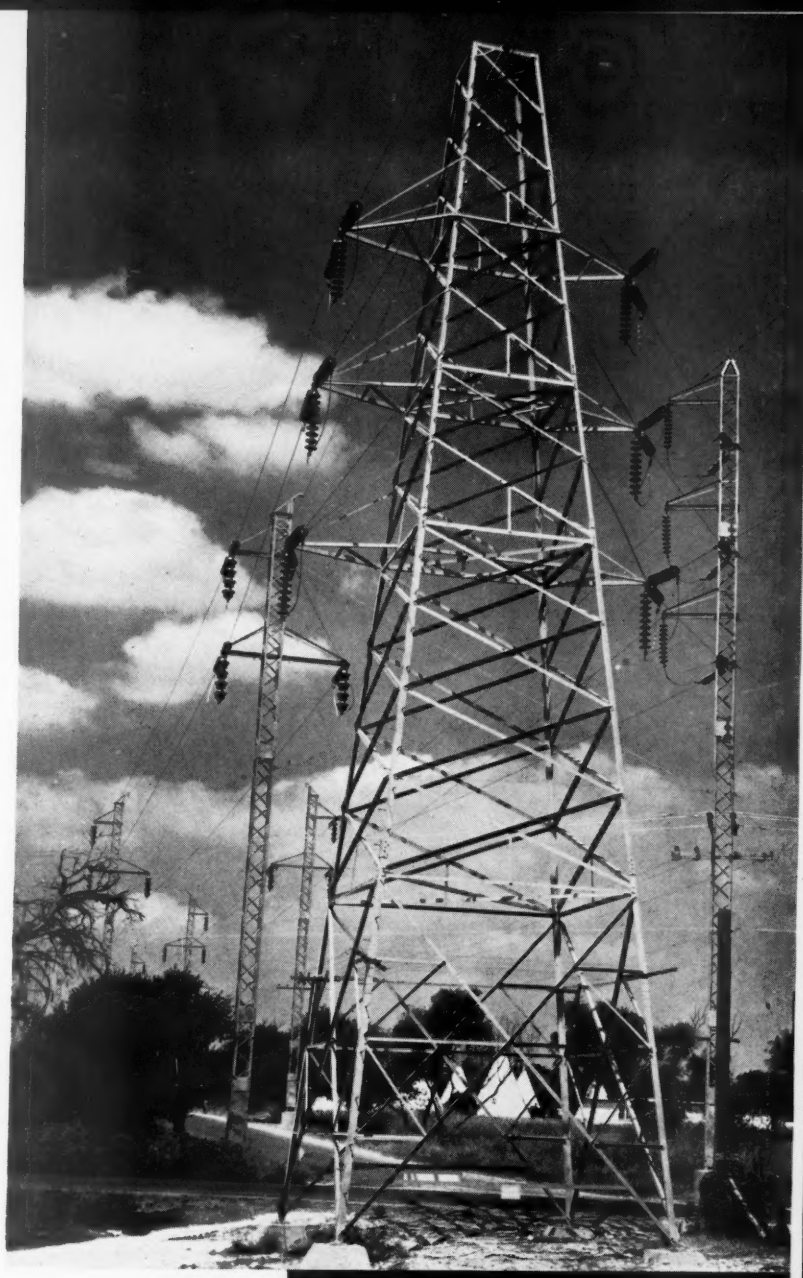
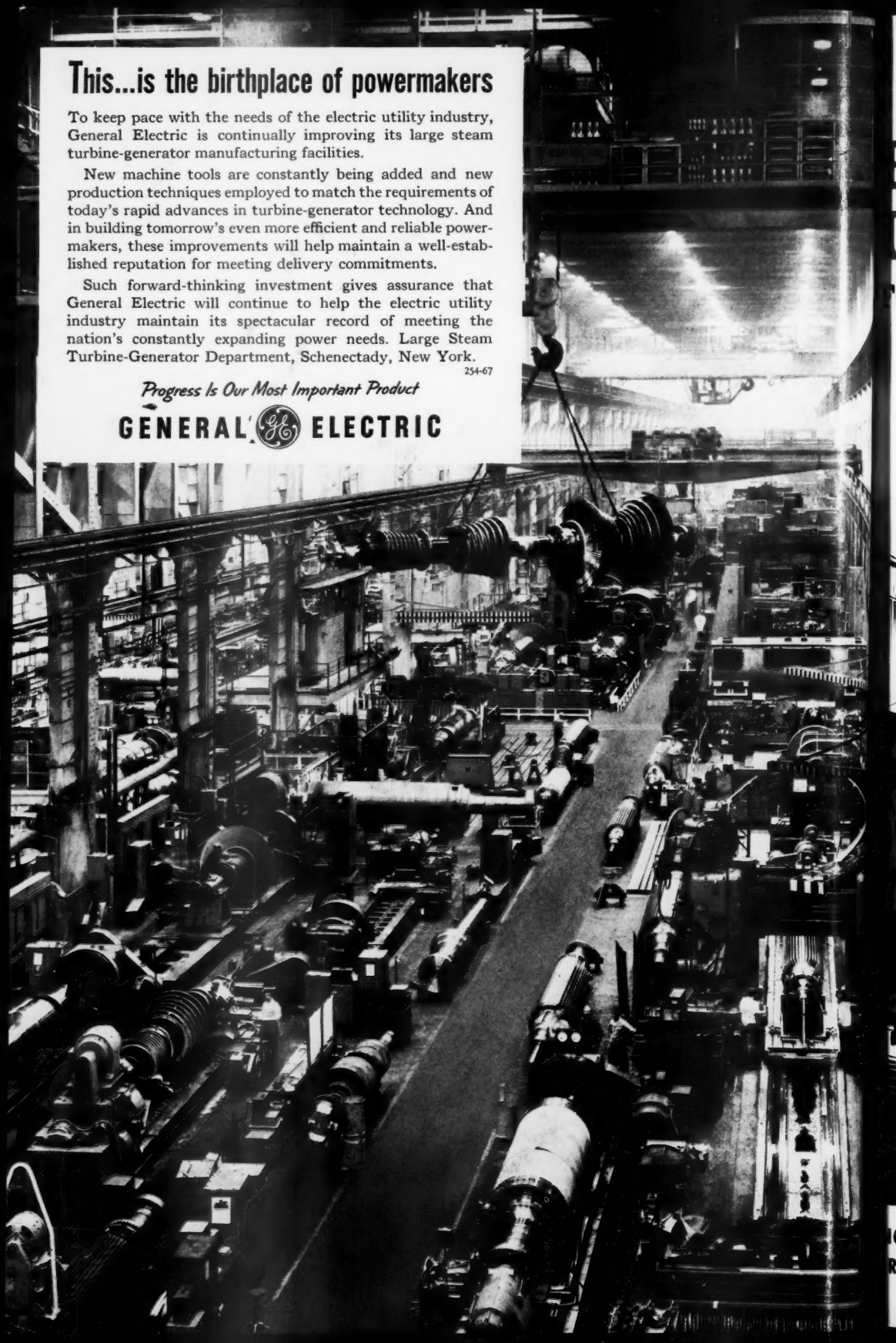


J. O. LeGATE, VICE PRESIDENT AND PRODUCTION MANAGER

ANCHOR METALS INC.

HURST, TEXAS • FORT MADISON, IOWA



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To keep pace with the needs of the electric utility industry, General Electric is continually improving its large steam turbine-generator manufacturing facilities.

New machine tools are constantly being added and new production techniques employed to match the requirements of today's rapid advances in turbine-generator technology. And in building tomorrow's even more efficient and reliable powermakers, these improvements will help maintain a well-established reputation for meeting delivery commitments.

Such forward-thinking investment gives assurance that General Electric will continue to help the electric utility industry maintain its spectacular record of meeting the nation's constantly expanding power needs. Large Steam Turbine-Generator Department, Schenectady, New York.

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